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11

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

NOTICE TO BIDDERS

AND

SPECIAL PROVISIONS

FOR CONSTRUCTION ON STATE HIGHWAY IN SAN DIEGO COUNTY NEAR OCEANSIDE FROM COCKLEBURR OVERCROSSING TO THE SAN DIEGO COUNTY LINE

In District 11 On Route 5

Under

***Bid* book dated December 9, 2013**	***Standard Specifications* dated 2010**
Project plans approved November 4, 2013	***Standard Plans* dated 2010**

Identified by

Contract No. 11-406704

11-SD-5-R58.1/R72.4

Project ID 1100020342

Federal-Aid Project
ACNHPI-005-1(627)E

Electronic Advertising Contract

AADD

Bids open Thursday, February 13, 2014 **OSD**

Dated December 9, 2013 **IH**

****

SPECIAL NOTICES

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- For federal-aid projects, the Department is modifying its DBE program.

CONTRACT NO. 11-406704

The special provisions contained herein have been prepared by or under the direction of the following Registered Persons.

HIGHWAY

REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Duy N Hoang
No. 66033
Exp. 06-30-14
CIVIL
STATE OF CALIFORNIA

ELECTRICAL (HIGHWAY)

REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Dante C. Buenviaje
No. 64180
Exp. 06-30-15
CIVIL
STATE OF CALIFORNIA

STRUCTURES

11/4/13

REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
Karen L Doll
No. C 68444
Exp. 09/30/2015
CIVIL
STATE OF CALIFORNIA

TABLE OF CONTENTS

STANDARD PLANS LIST

The standard plan sheets applicable to this Contract include those listed below. The applicable revised standard plans (RSPs) listed below are included in the project plans.

A10A	Abbreviations (Sheet 1 of 2)
A10B	Abbreviations (Sheet 2 of 2)
A10C	Lines and Symbols (Sheet 1 of 3)
A10D	Lines and Symbols (Sheet 2 of 3)
A10E	Lines and Symbols (Sheet 3 of 3)
A20A	Pavement Markers and Traffic Lines, Typical Details
A20B	Pavement Markers and Traffic Lines, Typical Details
A20C	Pavement Markers and Traffic Lines, Typical Details
A20D	Pavement Markers and Traffic Lines, Typical Details
RSP A24A	Pavement Markings - Arrows
A24B	Pavement Markings - Arrows and Symbols
RSP A24C	Pavement Markings - Symbols and Numerals
A24D	Pavement Markings - Words
RSP A24E	Pavement Markings - Words, Limit and Yield Lines
RSP A24F	Pavement Markings - Crosswalks
A40A	Shoulder Rumble Strip Details - Rolled-In Indentations
A40B	Shoulder Rumble Strip Details - Ground-In Indentations
A62A	Excavation and Backfill - Miscellaneous Details
A62D	Excavation and Backfill - Concrete Pipe Culverts
A62DA	Excavation and Backfill - Concrete Pipe Culverts - Indirect Design Method
A62F	Excavation and Backfill - Metal and Plastic Culverts
A73B	Markers
A73C	Delineators, Channelizers and Barricades
A76A	Concrete Barrier Type 60
A77A2	Metal Beam Guard Railing - Standard Railing Section (Steel Post with Notched Wood or Notched Recycled Plastic Block)
A77B1	Metal Beam Guard Railing - Standard Hardware
A77C2	Metal Beam Guard Railing - Steel Post and Notched Wood Block Details
A77C3	Metal Beam Guard Railing - Typical Line Post Embedment and Hinge Point Offset Details
A77C4	Metal Beam Guard Railing - Typical Railing Delineation and Dike Positioning Details

A77F1	Metal Beam Guard Railing - Typical Layouts for Structure Approach
A77F5	Metal Beam Guard Railing - Typical Layouts for Structure Departure
A77G3	Metal Beam Guard Railing - Typical Layouts for Roadside Fixed Objects
A77H1	Metal Railing - End Anchor Assembly (Type SFT)
A77H3	Metal Railing - Anchor Cable and Anchor Plate Details
A77I2	Metal Beam Guard Railing - Buried Post End Anchor
A77J1	Metal Beam Guard Railing - Connections to Bridge Railings without Sidewalks Details No. 1
A77J2	Metal Beam Guard Railing - Connections to Bridge Railings without Sidewalks Details No. 2
A77J4	Metal Beam Guard Railing - Transition Railing (Type WB)
A78B	Thrie Beam Barrier - Standard Barrier Railing Section (Steel Post with Notched Wood Block or Notched Recycled Plastic Block)
A78C1	Thrie Beam Barrier - Standard Hardware Details
A78C2	Thrie Beam Barrier - Post and Block Details
A78F1	Double Thrie Beam Barrier - Connection to Bridge Railings without Sidewalks
A78F2	Single Thrie Beam Barrier - Connections to Bridge Railings without Sidewalks
A78H	Thrie Beam Barrier - Typical Layout for Connection to Bridge Railing
A78J	Single Thrie Beam Barrier - Transition Railing (Type STB)
A78K	Double Thrie Beam Barrier - Transition Railing (Type DTB)
A81A	Crash Cushion, Sand Filled (Unidirectional)
A87A	Curbs and Driveways
A87B	Hot Mix Asphalt Dikes
A88A	Curb Ramp Details
P1	Jointed Plain Concrete Pavement
P2	Jointed Plain Concrete Pavement - Widened Slab Details
RSP P8	Jointed Plain Concrete Pavement - Individual Slab Replacement
RSP P10	Concrete Pavement - Dowel Bar Details
P12	Concrete Pavement - Dowel Bar Basket Details
P17	Concrete Pavement - Tie Bar Basket Details
RSP P18	Concrete Pavement - Lane Schematics and Isolation Joint Detail
P20	Concrete Pavement - Joint Details
RSP P30	Concrete Pavement - End Panel Pavement Transitions
P33	Concrete Pavement - Lane Drop Paving Details No. 1
P34	Concrete Pavement - Lane Drop Paving Details No. 2
P35	Concrete Pavement - Ramp Transition Paving Details
D71	Drainage Inlet Markers

RSP D73	Drainage Inlets
D73A	Drainage Inlets (Precast)
D74C	Drainage Inlet Details
RSP D77A	Grate Details No. 1
RSP D77B	Grate Details No. 2
D78C	Inlet Depressions - Hot Mix Asphalt Shoulders
D79	Precast Reinforced Concrete Pipe - Direct Design Method
D79A	Precast Reinforced Concrete Pipe - Direct Design Method
D87D	Overside Drains
D93B	Drainage Inlet Riser Connections
D97A	Corrugated Metal Pipe Coupling Details No. 1 - Annular Coupling Band Bar and Strap and Angle Connections
D97C	Corrugated Metal Pipe Coupling Details No. 3 - Helical and Universal Couplers
D97D	Corrugated Metal Pipe Coupling Details No. 4 - Hugger Coupling Bands
D97E	Corrugated Metal Pipe Coupling Details No. 5 - Standard Joint
D97H	Reinforced Concrete Pipe or Non-Reinforced Concrete Pipe - Standard and Positive Joints
D97I	Corrugated Polyvinyl Chloride Pipe with Smooth Interior - Standard and Positive Joints
D97J	Composite Steel Spiral Rib Pipe with Smooth Interior - Standard Joint
D102	Underdrains
T1A	Temporary Crash Cushion, Sand Filled (Unidirectional)
T1B	Temporary Crash Cushion, Sand Filled (Bidirectional)
T2	Temporary Crash Cushion, Sand Filled (Shoulder Installations)
T3A	Temporary Railing (Type K)
T3B	Temporary Railing (Type K)
RSP T9	Traffic Control System for Lane Closure on Freeways and Expressways
RSP T10	Traffic Control System for Lane Closure on Freeways and Expressways
RSP T10A	Traffic Control System for Lane Closures on Freeways and Expressways
RSP T13	Traffic Control System for Lane Closure on Two Lane Conventional Highways
RSP T14	Traffic Control System for Ramp Closure
RSP T15	Traffic Control System for Moving Lane Closure on Multilane Highways
RSP T16	Traffic Control System for Moving Lane Closure on Multilane Highways
T56	Temporary Water Pollution Control Details (Temporary Fiber Roll)
T59	Temporary Water Pollution Control Details (Temporary Concrete Washout Facility)
T62	Temporary Water Pollution Control Details (Temporary Drainage Inlet Protection)
T65	Temporary Water Pollution Control Details [Temporary Fence (Type ESA)]

B6-21	Joint Seals (Maximum Movement Rating = 2")
RS1	Roadside Signs, Typical Installation Details No. 1
RS2	Roadside Signs - Wood Post, Typical Installation Details No. 2
RS4	Roadside Signs, Typical Installation Details No. 4
S93	Framing Details for Framed Single Sheet Aluminum Signs, Rectangular Shape
S94	Roadside Framed Single Sheet Aluminum Signs, Rectangular Shape
S95	Roadside Single Sheet Aluminum Signs, Diamond Shape
ES-1A	Electrical Systems (Legend, Notes and Abbreviations)
ES-1B	Electrical Systems (Legend, Notes and Abbreviations)
ES-1C	Electrical Systems (Legend, Notes and Abbreviations)
ES-3C	Electrical Systems (Controller Cabinet Foundation Details)
ES-5A	Electrical Systems (Detectors)
ES-5B	Electrical Systems (Detectors)
ES-5D	Electrical Systems (Curb Termination and Handhole)
RSP ES-8A	Electrical Systems (Pull Box)
RSP ES-8B	Electrical Systems (Traffic Rated Pull Box)
ES-13A	Electrical Systems (Splicing Details)
ES-13B	Electrical Systems (Fuse Rating, Kinking and Banding Detail)

CANCELED STANDARD PLANS LIST

The standard plan sheets listed below are canceled and not applicable to this contract.

B3-1	Canceled on April 20, 2012
B3-2	Canceled on April 20, 2012
B3-3	Canceled on April 20, 2012
B3-4	Canceled on April 20, 2012
B3-7	Canceled on April 20, 2012
B3-8	Canceled on April 20, 2012
ES-8	Canceled on January 20, 2012
ES-10	Canceled on July 20, 2012

NOTICE TO BIDDERS

Bids open Thursday, February 13, 2014

Dated December 9, 2013

General work description: PCC rehabilitation including PPCP, JPCP (RSC), and approach slabs.

The Department will receive sealed bids for CONSTRUCTION ON STATE HIGHWAY IN SAN DIEGO COUNTY NEAR OCEANSIDE FROM COCKLEBURR OVERCROSSING TO THE SAN DIEGO COUNTY LINE.

District-County-Route-Post Mile: 11-SD-5-R58.1/R72.4

Contract No. 11-406704

The Contractor must have either a Class A license or a combination of Class C licenses which constitutes a majority of the work.

The DBE Contract goal is 6 percent.

Federal-aid project no.:

ACNHPI-005-1(627)E

For the Federal training program, the number of trainees or apprentices is 16.

Bids must be on a unit price basis.

Complete the work within 500 working days.

The estimated cost of the project is $38,000,000.

A prebid meeting is scheduled for 1:00 pm, January 15, 2014, at Garcia Conference Room at 4050 Taylor Street, San Diego, CA 92110. The purpose of the prebid meeting is to discuss the weigh station and checkpoint and the various types of concrete repair, safety features and traffic requirements throughout the job site.

The Department will receive bids until 2:00 p.m. on the bid open date at 3347 Michelson Drive, Suite 100, Irvine, CA 92612-1692. Bids received after this time will not be accepted.

The Department will open and publicly read the bids at the above location immediately after the specified closing time.

District office addresses are provided in the *Standard Specifications*.

Present bidders' inquiries to the Department and view the Department's responses at:

http://www.dot.ca.gov/hq/esc/oe/project_status/bid_inq.html

Questions about alleged patent ambiguity of the plans, specifications, or estimate must be asked before bid opening. After bid opening, the Department does not consider these questions as bid protests.

Submit your bid with bidder's security equal to at least 10 percent of the bid.

Prevailing wages are required on this Contract. The Director of the California Department of Industrial Relations determines the general prevailing wage rates. Obtain the wage rates at the DIR Web site, http://www.dir.ca.gov, or from the Department's Labor Compliance Office of the district in which the work is located.

The federal minimum wage rates for this Contract as determined by the United States Secretary of Labor are available at http://www.dot.ca.gov/hq/esc/oe/federal-wages.

If the minimum wage rates as determined by the United States Secretary of Labor differs from the general prevailing wage rates determined by the Director of the California Department of Industrial Relations for similar classifications of labor, the Contractor and subcontractors must not pay less than the higher wage rate. The Department does not accept lower State wage rates not specifically included in the federal minimum wage determinations. This includes helper, or other classifications based on hours of experience, or any other classification not appearing in the federal wage determinations. Where federal wage determinations do not contain the State wage rate determination otherwise available for use by the Contractor and subcontractors, the Contractor and subcontractors must not pay less than the federal minimum wage rate that most closely approximates the duties of the employees in question.

The Department has made available Notices of Suspension and Proposed Debarment from the Federal Highway Administration. For a copy of the notices, go to http://www.dot.ca.gov/hq/esc/oe/contractor_info. Additional information is provided in the Excluded Parties List System at https://www.epls.gov.

Department of Transportation

D11CFD

BID ITEM LIST

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity
1	070030	LEAD COMPLIANCE PLAN	LS	LUMP SUM
2	080050	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM
3	090100	TIME-RELATED OVERHEAD (WDAY)	WDAY	500
4	120090	CONSTRUCTION AREA SIGNS	LS	LUMP SUM
5	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM
6	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	LF	153,000
7	120199	TRAFFIC PLASTIC DRUM	EA	400
8	120300	TEMPORARY PAVEMENT MARKER	EA	12,000
9	128651	PORTABLE CHANGEABLE MESSAGE SIGN (EA)	EA	6
10	129000	TEMPORARY RAILING (TYPE K)	LF	26,700
11	129100	TEMPORARY CRASH CUSHION MODULE	EA	700
12	026760	ARMORGUARD BARRIER SYSTEM	LF	1,120
13	130100	JOB SITE MANAGEMENT	LS	LUMP SUM
14	130300	PREPARE STORM WATER POLLUTION PREVENTIONPLAN	LS	LUMP SUM
15	130330	STORM WATER ANNUAL REPORT	EA	3
16	130620	TEMPORARY DRAINAGE INLET PROTECTION	EA	63
17	130640	TEMPORARY FIBER ROLL	LF	21,000
18	130730	STREET SWEEPING	LS	LUMP SUM
19	130900	TEMPORARY CONCRETE WASHOUT	LS	LUMP SUM
20	141000	TEMPORARY FENCE (TYPE ESA)	LF	5,110

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity
21	141120	TREATED WOOD WASTE	LB	213,000
22	150662	REMOVE METAL BEAM GUARD RAILING	LF	18,600
23	150665	REMOVE SINGLE METAL BEAM BARRIER	LF	250
24	150667	REMOVE DOUBLE METAL BEAM BARRIER	LF	330
25	150711	REMOVE PAINTED TRAFFIC STRIPE	LF	243,000
26	150714	REMOVE THERMOPLASTIC TRAFFIC STRIPE	LF	25,500
27	150715	REMOVE THERMOPLASTIC PAVEMENT MARKING	SQFT	440
28	150771	REMOVE ASPHALT CONCRETE DIKE	LF	94,600
29	150847	REMOVE CONCRETE PAVEMENT AND BASE	CY	51,500
30	152390	RELOCATE ROADSIDE SIGN	EA	2
31	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	SQYD	162,000
32	153121	REMOVE CONCRETE (CY)	CY	31
33	156590	REMOVE CRASH CUSHION (SAND FILLED)	EA	11
34	160102	CLEARING AND GRUBBING (LS)	LS	LUMP SUM
35	170101	DEVELOP WATER SUPPLY	LS	LUMP SUM
36	190101	ROADWAY EXCAVATION	CY	27,600
37	198010	IMPORTED BORROW (CY)	CY	16,300
38	210250	EROSION CONTROL (BONDED FIBER MATRIX) (SQFT)	SQFT	454,000
39	260203	CLASS 2 AGGREGATE BASE (CY)	CY	6,440
40	280010	RAPID STRENGTH CONCRETE BASE	CY	14,000

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity
41	280015	LEAN CONCRETE BASE RAPID SETTING	CY	6,250
42	374002	ASPHALTIC EMULSION (FOG SEAL COAT)	TON	99
43	390131	HOT MIX ASPHALT	TON	56,300
44	390136	MINOR HOT MIX ASPHALT	TON	3,140
45	390137	RUBBERIZED HOT MIX ASPHALT (GAP GRADED)	TON	1,920
46	394050	RUMBLE STRIP	STA	1,020
47	026761	SHOULDER RUMBLE STRIP (AC, GROUND-IN INDENTATIONS)	STA	1,390
48	394073	PLACE HOT MIX ASPHALT DIKE (TYPE A)	LF	11,500
49	394074	PLACE HOT MIX ASPHALT DIKE (TYPE C)	LF	1,480
50	394075	PLACE HOT MIX ASPHALT DIKE (TYPE D)	LF	15,300
51	394076	PLACE HOT MIX ASPHALT DIKE (TYPE E)	LF	65,900
52	394077	PLACE HOT MIX ASPHALT DIKE (TYPE F)	LF	12,100
53	394090	PLACE HOT MIX ASPHALT (MISCELLANEOUS AREA)	SQYD	750
54	397005	TACK COAT	TON	110
55	401055	JOINTED PLAIN CONCRETE PAVEMENT (RSC)	CY	38,700
56	401083	SHOULDER RUMBLE STRIP (CONCRETE PAVEMENT, GROUND-IN INDENTATIONS)	STA	400
57	404093	SEAL ISOLATION JOINT	LF	42,300
58	026762	PRECAST PRESTRESSED CONCRETE PAVEMENT	CY	990
59	410095	DOWEL BAR (DRILL AND BOND)	EA	7,820
60	410103	DRILL HOLE (JACKING)	EA	360

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity
61	410107	GROUT (JACKING)	TON	91
62	411105	INDIVIDUAL SLAB REPLACEMENT (RSC)	CY	9,120
63	413113	REPAIR SPALLED JOINTS, POLYESTER GROUT	SQYD	700
64	413117	SEAL CONCRETE PAVEMENT JOINT (SILICONE)	LF	410,000
65	420201	GRIND EXISTING CONCRETE PAVEMENT	SQYD	61,700
66	510081	AGGREGATE BASE (APPROACH SLAB)	CY	72
67	510087	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	CY	711
68 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	CY	75
69	510800	PAVING NOTCH EXTENSION	CF	141
70	511118	CLEAN EXPANSION JOINT	LF	362
71	519081	JOINT SEAL (MR 1/2")	LF	112
72	519091	JOINT SEAL (MR 1 1/2")	LF	760
73	519100	JOINT SEAL (MR 2")	LF	156
74	560248	FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-UNFRAMED)	SQFT	110
75	566011	ROADSIDE SIGN - ONE POST	EA	11
76	568017	INSTALL ROADSIDE SIGN PANEL ON EXISTING POST	EA	6
77	620100	18" ALTERNATIVE PIPE CULVERT	LF	320
78	620140	24" ALTERNATIVE PIPE CULVERT	LF	3,760
79	665117	18" BITUMINOUS COATED CORRUGATED STEEL PIPE (.079" THICK)	LF	7
80	665123	24" BITUMINOUS COATED CORRUGATED STEEL PIPE (.079" THICK)	LF	14

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity
81	680285	4" PLASTIC PIPE UNDERDRAIN	LF	650
82	026763	4" PERFORATED PLASTIC PIPE UNDERDRAIN	LF	15,700
83	026764	SYNTHETIC SUBSURFACE DRAINAGE LAYER	SQYD	22,200
84	700617	DRAINAGE INLET MARKER	EA	3
85	730070	DETECTABLE WARNING SURFACE	SQFT	100
86	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	CY	37
87 (F)	750001	MISCELLANEOUS IRON AND STEEL	LB	11,723
88	820107	DELINEATOR (CLASS 1)	EA	260
89	820118	GUARD RAILING DELINEATOR	EA	4,160
90	832002	METAL BEAM GUARD RAILING (STEEL POST)	LF	17,800
91	839303	SINGLE THRIE BEAM BARRIER (STEEL POST)	LF	75
92	839312	DOUBLE THRIE BEAM BARRIER (STEEL POST)	LF	63
93	839540	TRANSITION RAILING (TYPE STB)	EA	5
94	839541	TRANSITION RAILING (TYPE WB)	EA	13
95	839542	TRANSITION RAILING (TYPE DTB)	EA	7
96	839581	END ANCHOR ASSEMBLY (TYPE SFT)	EA	26
97	839584	ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	1
98	839585	ALTERNATIVE FLARED TERMINAL SYSTEM	EA	31
99	026765	ALTERNATIVE CRASH CUSHION SYSTEM	EA	1
100	839701	CONCRETE BARRIER (TYPE 60)	LF	190

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity
101	840516	THERMOPLASTIC PAVEMENT MARKING (ENHANCED WET NIGHT VISIBILITY)	SQFT	2,810
102	840655	PAINT TRAFFIC STRIPE (1-COAT)	LF	199,000
103	846001	4" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	318,000
104	846004	4" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY) (BROKEN 17-7)	LF	2,800
105	846007	6" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	149,000
106	846009	8" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	11,500
107	846010	8" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY) (BROKEN 12-3)	LF	2,200
108	026766	6" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY) (BROKEN 36-12)	LF	450,000
109	850101	PAVEMENT MARKER (NON-REFLECTIVE)	EA	38,100
110	850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	15,600
111	860090	MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION	LS	LUMP SUM
112	861204	WEIGH STATION BYPASS SYSTEM	LS	LUMP SUM
113	026767	PULL BOX	EA	10
114	999990	MOBILIZATION	LS	LUMP SUM

SPECIAL PROVISIONS

- See section 2-1.04 for information about the prebid meeting.

DIVISION I GENERAL PROVISIONS

1 GENERAL

Add to section 1-1.01:

Bid Items and Applicable Sections

Item code	Item description	Applicable section
026760	ARMORGUARD BARRIER SYSTEM	12
026761	SHOULDER RUMBLE STRIP(AC, GROUND-IN INDENTATIONS)	39
026762	PRECAST PRESTRESSED CONCRETE PAVEMENT	40
026763	4"PERFORATED PLASTIC PIPE UNDERDRAIN	68
026764	SYNTHETIC SUBSURFACE DRAINAGE LAYER	68
026765	ALTERNATIVE CRASH CUSHION SYSTEM	83
026766	6" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY) (BROKEN 36-12)	84
026767	PULL BOX	86

^^

2 BIDDING

Replace "Reserved" in section 2-1.04 with:

2-1.04 PREBID MEETING

The Department will conduct one prebid meeting for this contract. Your attendance is optional.

Prospective attendees are limited to bidders and persons representing the bidder. The representative must be a company officer, project superintendent, or project estimator.

A sign-up sheet will be used to identify participants attending the prebid meeting.

Add to section 2-1.06B:

The Department makes the following supplemental project information available:

Supplemental Project Information

Means	Description
Included in the *Information Handout*	High Speed Weigh-In-Motion (WIM) System Records And Output
Available as specified in the *Standard Specifications*	Bridge as-built drawings

^^

5 CONTROL OF WORK

Add to section 5-1.09A:

The Department encourages the project team to exhaust the use of partnering in dispute resolution before engagement of an objective third party.

For certain disputes, a facilitated partnering session or facilitated dispute resolution session may be appropriate and effective in clarifying issues and resolving all or part of a dispute.

To afford the project team enough time to plan and hold the session, a maximum of 20 days may be added to the DRB referral time following the Engineer's response to a *Supplemental Potential Claim Record*.

To allow this additional referral time, the project team must document its agreement and intention in the dispute resolution plan of the partnering charter. The team may further document agreement of any associated criteria to be met for use of the additional referral time.

If the session is not held, the DRB referral time remains in effect as specified in section 5-1.43.

Add to section 5-1.20A:

During the progress of the work under this Contract, work under the following contracts may be in progress at or near the job site of this Contract:

Coincident or Adjacent Contracts

Contract no.	County–Route–Post Mile	Location	Type of work
11-238604	SD-5-5.0/R63.7	various locations north of Oceanside	Replace bridge approach slabs, joint seal, upgrade MBGR.
11-261404	SD-5-R59.4/R60.0	5.2 miles north of Oceanside	Replace buildings.
11-401404	SD-5-R12.6/R72.2	Oceanside and various locations north of Oceanside	Replace MBGR with concrete barrier and upgrade crash cushions.
11-408904	SD-5-R54.4/R72.2	Oceanside and various locations north of Oceanside	Clean and treat bridge deck with methacrylate and replace joint seals.

Add to section 5-1.20C:

5-1.20C(1) General

This project does not include work on the railroad property, but a railroad is shown on the general plan sheet within the project limits. Do not trespass on the North County Transit District railroad property on Route 5.

You are responsible for all damages to railroad track, structure, embankment and appurtenances, and to railroad equipment operating on such track, resulting from your operations.

Conduct your operations in a manner that prevents debris, or any other material, from falling on the tracks and railroad right of way.

5-1.20C(2) Emergency Hotline

Your personnel working near, below or above railroad tracks must have within their immediate reach the Emergency Hotline Number (800) 848-8715, Option 1, to report incidents along railroad tracks. This line is monitored 24 hours a day, 7 days a week.

^^

7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

Replace section 7-1.02K(6)(j)(iii) with:

7-1.02K(6)(j)(iii) Earth Material Containing Lead

Section 7-1.02K(6)(j)(iii) includes specifications for handling, removing, and disposing of earth material containing lead.

Submit a lead compliance plan.

Lead is present in earth material on the job site. The average lead concentrations are below 1,000 mg/kg total lead and below 5 mg/L soluble lead. The material on the job site:

1. Is not a hazardous waste
2. Does not require disposal at a permitted landfill or solid waste disposal facility

Lead is typically found within the top 2 feet of material in unpaved areas of the highway. Reuse all of the excavated material on the right-of-way.

Handle the material under all applicable laws, rules, and regulations, including those of the following agencies:

1. Cal/OSHA
2. CA RWQCB, Region 9 —San Diego
3. CA Department of Toxic Substances Control
4. San Diego Department of Environmental Health

^^

8 PROSECUTION AND PROGRESS

Replace the 4th paragraph of Section 8-1.02D(6) with:

The baseline schedule must be supplemented with resource allocations for every task activity and include time-scaled resource histograms. Resource allocations must be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for you and your subcontractors.

Replace "Reserved" in section 8-1.04C with:

Section 8-1.04B does not apply.

Start job site activities within 55 days after receiving notice that the Contract has been approved by the Attorney General or the attorney appointed and authorized to represent the Department.

Do not start job site activities until the Department authorizes or accepts your submittal for:

1. CPM baseline schedule
2. WPCP or SWPPP, whichever applies
3. Notification of DRA or DRB nominee and disclosure statement

You may enter the job site only to measure controlling field dimensions and locating utilities.

Do not start other job site activities until all the submittals from the above list are authorized or accepted and the following information is received by the Engineer:

1. *Notice of Materials To Be Used*.
2. Contingency plan for reopening closures to public traffic.
3. Written statement from the vendor that the order for the sign panels has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.
4. Written statement from the vendor that the order for electrical material has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.
5. Written statement from the vendor that the order for the Armorguard barrier system has been received and accepted by the vendor. The statement must show the dates that the materials will be shipped.

You may start job site activities before the 55th day after Contract approval if you:

1. Obtain specified authorization or acceptance for each submittal before the 55th day
2. Receive authorization to start

Submit a notice 72 hours before starting job site activities. If the project has more than 1 location of work, submit a separate notice for each location.

Replace section 8-1.09 with:

8-1.09 INCENTIVE/DISINCENTIVE FOR EARLY COMPLETION

The Department pays you the incentive for each day you complete the corresponding work part fewer than the working days shown in the following table except as specified for the maximum total incentive and deducts the disincentive for each day you complete the corresponding work part more than the working days shown in the following table except as specified for the maximum total disincentive:

Incentive/Disincentive for Work Part Completion within Specified Times

Work part	Working days	Incentive amount	Disincentive amount
Complete all construction Contract work (meet Contract acceptance milestone)	500	$20,000.00 per day	$20,000.00 per day

The Department pays a maximum total incentive of $2,000,000.00.

The Department deducts a maximum total disincentive of $2,000,000.00.

These incentives and disincentives are independent of liquidated damages and other damages specified.

At your request, the Department may accelerate its inspection and testing. The Department deducts any additional expenses incurred as a result of the acceleration.

The time limit specified for the completion of the work is considered insufficient to permit completion of the work by working a normal number of hours per day or week on a single shift basis. Should you fail to maintain the progress of the work in compliance with section 8-1.02, additional shifts will be required to the extent necessary to ensure that the progress conforms to the above mentioned schedule and that the work will be completed within the time limit specified.

Actions required by the Engineer to perform normal inspection and testing duties will not be considered as contributing to any delay in awarding incentives or to any delay that will require charging disincentives.

^^

9 PAYMENT

Add to section 9-1.16C:

The following items are eligible for progress payment even if they are not incorporated into the work:

1. Pavement dowel bars, tie bars and tensioning strand
2. Type B joint seals
3. Culvert pipe
4. Underdrain pipe
5. Synthetic subsurface drainage layer
6. Miscellaneous iron and steel
7. Metal beam guard railing and appurtenances
8. Alternative crash cushion
9. Pavement markers

^^

DIVISION II GENERAL CONSTRUCTION

11 QUALITY CONTROL AND ASSURANCE

Add to section 11-2.01:

The following must comply with the specifications for PC concrete QC:

1. Precast Prestressed Concrete Pavement.

^^

12 TEMPORARY TRAFFIC CONTROL

Replace section 12-2 with:

12-2 CONSTRUCTION PROJECT FUNDING SIGNS

12-2.01 GENERAL

Section 12-2 includes specifications for installing construction project funding signs.

Construction project funding signs must comply with the details shown on the Department's Traffic Operations Web site.

Keep construction project funding signs clean and in good repair at all times.

12-2.02 MATERIALS

Construction project funding signs must be wood post signs complying with section 56-4.

Sign panels for construction project funding signs must be framed, single sheet aluminum panels complying with section 56-2.

The background on construction project funding signs must be Type II retroreflective sheeting on the Authorized Material List for signing and delineation materials.

The legend must be retroreflective, except for nonreflective black letters and numerals. The colors blue and orange must comply with PR Color no. 3 and no. 6, respectively, as specified in the Federal Highway Administration's *Color Tolerance Chart*.

The legend for the type of project on construction project funding signs must read as follows:

HIGHWAY REPAIR

The legend for the types of funding on construction project funding signs must read as follows and in the following order:

FEDERAL HIGHWAY TRUST FUNDS

STATE HIGHWAY FUNDS

The Engineer will provide the year of completion for the legend on construction project funding signs. Furnish and install a sign overlay for the year of completion within 10 working days of notification.

The size of the legend on construction project funding signs must be as described. Do not add any additional information unless authorized.

12-2.03 CONSTRUCTION

Install 2 Type 2 construction project funding signs at the locations designated by the Engineer before starting major work activities visible to highway users.

When authorized, remove and dispose of construction project funding signs upon completion of the project.

12-2.04 PAYMENT

Not Used

Add to section 12-3.12C:

Start displaying the message on the portable changeable message sign 30 minutes before closing the lane.

Place the portable changeable message sign in advance of the 1st warning sign for each:

1. Stationary lane closure
2. Off-ramp closure
3. Shoulder closure
4. Speed reduction zone

Replace section 12-3.13 with:

12-3.13 IMPACT ATTENUATOR VEHICLE

12-3.13A General

12-3.13A(1) Summary

Section 12-3.13 includes specifications for protecting traffic and workers with an impact attenuator vehicle during moving lane closures and when placing and removing components of stationary lane closures, ramp closures, shoulder closures, or a combination.

Impact attenuator vehicles must comply with the following test levels under National Cooperative Highway Research Program 350:

1. Test level 3 if the preconstruction posted speed limit is 50 mph or more
2. Test levels 2 or 3 if the preconstruction posted speed limit is 45 mph or less

Comply with the attenuator manufacturer's instructions for:

1. Support truck
2. Trailer-mounted operation
3. Truck-mounted operation

Flashing arrow signs must comply with section 12-3.03. You may use a portable changeable message sign instead of a flashing arrow sign. If a portable changeable message sign is used as a flashing arrow sign, it must comply with section 6F.56 "Arrow Panels" of the *California MUTCD*.

12-3.13A(2) Definitions

impact attenuator vehicle: A support truck that is towing a deployed attenuator mounted to a trailer or a support truck with a deployed attenuator that is mounted to the support truck.

12-3.13A(3) Submittals

Upon request, submit a certificate of compliance for each attenuator used on the project.

12-3.13A(4) Quality Control and Assurance

Do not start impact attenuator vehicle activities until authorized.

Before starting impact attenuator vehicle activities, conduct a preinstallation meeting with the Engineer, subcontractors, and other parties involved with traffic control to discuss the operation of the impact attenuator vehicle during moving lane closures and when placing and removing components of stationary traffic control systems.

Schedule the location, time, and date for the preinstallation meeting with all participants. Furnish the facility for the preinstallation meeting within 5 miles of the job site or at another location if authorized.

12-3.13B Materials

Attenuators must be a brand on the Authorized Material List for highway safety features.

The combined weight of the support truck and the attenuator must be at least 19,800 pounds, except the weight of the support truck must not be less than 16,100 or greater than 26,400 pounds.

For the Trinity MPS-350 truck–mounted attenuator, the support truck must not have a fuel tank mounted underneath within 10'-6" of the rear of the support truck.

Each impact attenuator vehicle must have:

1. Legal brake lights, taillights, sidelights, and turn signals
2. Inverted "V" chevron pattern placed across the entire rear of the attenuator composed of alternating 4-inch wide nonreflective black stripes and 4-inch wide yellow retroreflective stripes sloping at 45 degrees
3. Type II flashing arrow sign
4. Flashing or rotating amber light
5. Operable 2-way communication system for maintaining contact with workers

12-3.13C Construction

Use an impact attenuator vehicle:

1. To follow behind equipment and workers who are placing and removing components of a stationary lane closure, ramp closure, shoulder closure, or any combination. Operate the flashing arrow sign in the arrow or caution mode during this activity, whichever applies. Follow at a distance that prevents intrusion into the workspace from passing traffic.
2. As a shadow vehicle in a moving lane closure.

After placing components of a stationary traffic control system you may place the impact attenuator vehicle in advance of the work area or at another authorized location to protect traffic and workers.

Secure objects, including equipment, tools, and ballast on impact attenuator vehicles to prevent loosening upon impact by an errant vehicle.

Do not use a damaged attenuator in the work. Replace any attenuator damaged from an impact during work activities at your expense.

12-3.13D Payment

Not Used

Add section 12-3.18:

12-3.18 ARMORGUARD BARRIER SYSTEM

12-3.18A General

This ArmorGuard Barrier shall be a TL-3 barrier tested in accordance with the evaluation parameters contained in NCHRP Report 350 (Test Level 3).

12-3.18A(1) Summary

This section includes specifications for installing ArmorGuard Barrier System, formerly known as Safeguard Link System and as shown under the manufacturer's installation instructions and these special provisions.

12-3.18A(2) Submittals

Submit a certificate of compliance and a copy of the manufacturer's installation instructions for the ArmorGuard Barrier System.

Furnish the Engineer with the following:

1. A statement from the vendor stating that the purchase order for the ArmorGuard Barrier System has been received and accepted by the vendor.
2. A copy of the manufacturer's plan and parts list for the model installed and training certificate for the operation of ArmorGuard Barrier System.
3. A Certificate of Compliance

12-3.18B Materials

The successful bidder can obtain the ArmorGuard Barrier System from the following source:

A. Manufacturer:
BARRIER SYSTEMS, Inc.
333 Vaca Valley Parkway, Ste. #800
Vacaville, CA 95688
Telephone (707) 374-6800

B. Distributors:
Statewide Safety & Signs, Inc.
13765 Biaisdell Place
Poway, CA 92064
Telephone (858) 679-7292

The price quoted by the manufacturer for the ArmorGuard Barrier System which includes eight 28 foot sections of ArmorGuard, one transition section to an ABSORB 350 crash cushion, and one ABSORB 350 crash cushion including nine wheel roller lifts, FOB Vacaville, CA is $151,130.00, not including sales tax.

The above price will be firm for orders placed on or before June 30, 2014, provided delivery is accepted within 90 days after the order is placed.

Reflectors on ArmorGuard Barrier System must conform to temporary railing (Type K) of the standard specifications, and adhesive must conform to the reflector manufacturer's recommendations.

12-3.18C Construction

The ArmorGuard Barrier System must be installed in conformance with the manufacturer's instruction and installation manual and these special provisions.

Install two reflectors on each length of barrier placed within 10 ft of a traffic lane, one at the top of the barrier and the other at five inches from the top of the existing pavement.

A minimum of eight 28 foot sections connected per the manufacturer's installation instructions, with a manufacturer provided transition plus an approved crash cushion(s) shall be used to make a system.

After initial placement of ArmorGuard Barrier System, the ArmorGuard Barrier System must be moved from location to location.

The system must be moved with a Barrier Systems Inc. approved truck mount attachment. Barrier Systems Inc. manufactures a truck mounted barrier push roller adapter assembly that attaches to a standard pick up truck to move large sections of barrier.

The ArmorGuard Barrier must be installed on a smooth firm surface that is capable of supporting the weight of the system. A Portland Concrete Cement (PCC) surface is preferred, but the system may be used on an asphalt concrete surface. Refer to system installation and maintenance manual for moving and towing requirements.

A TL-3 ABSORB 350 Crash Cushion shall be installed to the approach ends of the barrier exposed to traffic. Appropriate marker panels, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.

The ArmorGuard Barrier System must be used when one or more lanes or shoulder in the direction of travel are closed, unless otherwise authorized. Position the system to protect workers. Laterally move the system to the far edge of the right shoulder, or other authorized location, when no longer required for the shift's operations.

Four complete ArmorGuard Barrier System units must be on the job site at all times.

12-3.18D Payment

Not used

Add to section 12-4.01:

Payment for transporting bicyclists through a 1-way reversing traffic control work zone is included in the payment for traffic control system.

Add to section 12-4.02A:

If work including installing, maintaining, and removing Type K temporary railing is to be performed within 6 feet of the adjacent traffic lane, close the adjacent traffic lane.

Except as listed above, closure of the adjacent traffic lane is not required for installing, maintaining, and removing traffic control devices.

For grinding and grooving operations, sawcutting concrete slabs, and installing loop detectors with an impact attenuator vehicle as a shadow vehicle, closure of the adjacent traffic lane is not required.

Designated holidays are as shown in the following table:

Designated Holidays

Holiday	Date observed
New Year's Day	January 1st
Washington's Birthday	3rd Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4th
Labor Day	1st Monday in September
Veterans Day	November 11th
Thanksgiving Day	4th Thursday in November
Christmas Day	December 25th

If a designated holiday falls on a Sunday, the following Monday is a designated holiday. If November 11th falls on a Saturday, the preceding Friday is a designated holiday.

Personal vehicles of your employees must not be parked on the traveled way or shoulders, including sections closed to traffic.

If work vehicles or equipment are parked within 6 feet of a traffic lane, close the shoulder area as shown.

Add to section 12-4.03:

For each 10-minute interval or fraction thereof past the time specified to reopen the closure, the Department will deduct the amount per interval shown below from moneys due or that may become due the Contractor under the Contract. Damages are limited to 5 percent of the project cost per occurrence. Damages will not be assessed if the Engineer orders that the closure remain in place beyond the scheduled pickup time.

Type of facility	Route or segment	Period	Damages/interval ($)
Mainline	NB 5	1st half hour 2nd half hour 2nd hour and beyond	$1,100 / 10 minutes $1,650 / 10 minutes $2,200 / 10 minutes

Replace "Reserved" in section 12-4.04 with:

Lane Closure Restriction for Designated Holidays

Thu	Fri	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun
x	**H** xx	xx	xx							
x	xx	**H** xx	xx							
	x	xx	**H** xx	xx						
	x	xx	xx	**H** xx	xxx					
				x	**H** xx					
					x	**H** xx				
						x	**H** xx	xx	xx	xx

Legend:

	Refer to lane requirement charts
x	The full width of the traveled way must be open for use by traffic after 0500.
xx	The full width of the traveled way must be open for use by traffic.
xxx	The full width of the traveled way must be open for use by traffic until 0500.
H	Designated holiday
	REMARKS: This table is to be used concurrently with all charts.

Replace "Reserved" in section 12-4.05B with:

Chart no. B1
Freeway/Expressway Lane Requirements

County: SD	Route/Direction: 5/NB	PM: R56.44 – R72.37

Closure limits: Santa Margarita River to San Diego County Line

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	1	1	1	1	1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	2	2	1	1	
Fridays	1	1	1	1	1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Saturdays	S	S	S	1	1	1	2	2	3	3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Sundays	S	S	S	1	1	1	1	2	2	3	3	S	S	S	S	S	S	S	S	S	3	2	2	1	

Legend:

1	Provide at least 1 through freeway lane open in direction of travel
2	Provide at least 2 adjacent through freeway lanes open in direction of travel
3	Provide at least 3 adjacent through freeway lanes open in direction of travel
S	Shoulder closure allowed (right / left)
	Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

1-Placement of K-rail along the shoulder can be done in multiple segments whereby the length of all the segments can't exceed a maximum of 1.5 Miles total in one direction.

2-Contractor and the Engineer shall coordinate the above closure with Camp Pendleton and the San Onofre Nuclear Generating Station

3-Contractor and the Engineer shall coordinate the above closure with Caltrans' District-12 Traffic Manager and the Public Affairs' Office

4-Contractor and the Engineer shall coordinate the above closure with the CHP officials at the Truck Scales Station and the US Customs Officials when working within 1 mile of the Truck Scales Station

Chart no. B2
Freeway/Expressway Lane Requirements

County: SD	Route/Direction: 5/SB	PM: R72.37 – R58.37

Closure limits: San Diego County Line to Cook St. OC

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	1	1	1	1	1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	2	2	1	1	
Fridays	1	1	1	1	1	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Saturdays	S	S	S	1	1	1	2	2	3	3	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
Sundays	S	S	S	1	1	1	1	1	2	2	3	S	S	S	S	S	S	S	S	S	3	3	2	1	

Legend:

1	Provide at least 1 through freeway lane open in direction of travel
2	Provide at least 2 adjacent through freeway lanes open in direction of travel
3	Provide at least 3 adjacent through freeway lanes open in direction of travel
S	Shoulder closure allowed (right / left)
	Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

1-K-rail placed along the shoulder can be in multiple segments. The length of the segments can't exceed a maximum of 1.5 Miles

2-Contractor and the Engineer shall coordinate the above closure with Camp Pendleton and the San Onofre Nuclear Generating Station

3-Contractor and the Engineer shall coordinate the above closure with Caltrans' District-12 Traffic Manager and the Public Affairs' Office

4-Contractor and the Engineer shall coordinate the above closure with the CHP officials at the Truck Scales Station and the US Customs Officials when working within 1 mile of the Truck Scales Station

Replace "Reserved" in section 12-4.05E with:

Chart no. E1
Complete Ramp Closure Hours

County: SD	Route/Direction: 5/NB	PM: R59.318
		R59.529
	5/SB	R60.087
		R59.831

Closure limits: NB Off-ramp to Aliso Creek Rest Area

NB On-ramp from Aliso Creek Rest Area

SB Off-ramp to Aliso Creek Rest Area

SB On-ramp from Aliso Creek Rest Area

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C																C	C	C	C	
Fridays	C	C	C	C	C																				
Saturdays				C	C	C	C	C	C	C															
Sundays				C	C	C	C	C	C	C	C										C	C	C	C	

Legend:

C Ramp may be closed completely

Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

Contractor and the Engineer shall coordinate with District Traffic Manager and Traffic Management Center (7) days before the activation of the closures for the above locations.

NOTE: When an Off-ramp is closed completely, place a PCMS (Portable Changeable Message Sign) in the direction of travel allowing the traffic the option to use the preceding Off-ramp and warning them of the ramp closure ahead.

Chart no. E2
Complete Ramp Closure Hours

County: SD	Route/Direction: 5/NB	PM: R61.946
		R71.221
		R72.149
		R62.299
		R71.537
		R72.365

Closure limits: NB Off-ramp to Las Pulgas

NB Off-ramp to Basilone Rd.

NB Off-ramp to Cristianitos Rd.

NB On-ramp from Las Pulgas

NB On-ramp from Basilone Rd.

NB On-ramp from Cristianitos Rd.

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C																C	C	C	C	
Fridays	C	C	C	C	C																				
Saturdays				C	C	C	C	C	C	C															
Sundays				C	C	C	C	C	C	C	C										C	C	C	C	

Legend:

C Ramp may be closed completely

Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

1-Contractor and the Engineer shall coordinate the above closure with Camp Pendleton and the San Onofre Nuclear Generating Station

2-Contrator and the Engineer shall coordinate the above closure with Caltrans' District-12 Traffic Manager and Public Affairs' Office

NOTE: When an Off-ramp is closed completely, place a PCMS (Portable Changeable Message Sign) in the direction of travel allowing the traffic the option to use the preceding Off-ramp and warning them of the ramp closure ahead.

Chart no. E3
Complete Ramp Closure Hours

County: SD	Route/Direction: 5/SB	PM: R62.280
		R63.570
		R71.532
		R72.366
		R61.908
		R63.480
		R71.220
		R72.186

Closure limits: SB Off-ramp to Las Pulgas

SB Off-ramp to Vista Point

SB Off-ramp to Basilone Rd.

SB Off-ramp to Cristianitos Rd.

SB On-ramp from Las Pulgas

SB On-ramp from Vista Point

SB On-ramp from Basilone Rd.

SB On-ramp from Cristianitos Rd.

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C																C	C	C	C	
Fridays	C	C	C	C	C																				
Saturdays				C	C	C	C	C	C	C															
Sundays				C	C	C	C	C	C	C	C										C	C	C	C	

Legend:

C	Ramp may be closed completely
	Work allowed within the highway where shoulder or lane closure is not required

REMARKS:
1-Contractor and the Engineer shall coordinate the above closure with Camp Pendleton and the San Onofre Nuclear Generating Station

2-Contrator and the Engineer shall coordinate the above closure with Caltrans' District-12 Traffic Manager and Public Affairs' Office

NOTE: When an Off-ramp is closed completely, place a PCMS (Portable Changeable Message Sign) in the direction of travel allowing the traffic the option to use the preceding Off-ramp and warning them of the ramp closure ahead.

Chart no. E4
Complete Ramp Closure Hours

County: SD	Route/Direction: 5/NB	PM: R67.079
		R67.448

Closure limits: NB Off-ramp to Truck Scales

NB On-ramp from Truck Scales

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C																C	C	C	C	
Fridays	C	C	C	C	C																				
Saturdays				C	C	C	C	C	C	C															
Sundays				C	C	C	C	C	C	C	C										C	C	C	C	

Legend:

C	Ramp may be closed completely
	Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

The above closure can be used for a maximum of (5) times only
Contractor and the Engineer shall coordinate the above closure with the CHP officials at the Truck Scales Station and the US Customs Officials when working within (2) miles of the Truck Scales Station
This chart can't be used in conjunction with chart E5

NOTE: When an Off-ramp is closed completely, place a PCMS (Portable Changeable Message Sign) in the direction of travel allowing the traffic the option to use the preceding Off-ramp and warning them of the ramp closure ahead.

Chart no. E5
Complete Ramp Closure Hours

County: SD	Route/Direction: 5/SB	PM: R67.412
		R67.042

Closure limits: SB Off-ramp to Truck Scales

SB On-ramp from Truck Scales

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C																C	C	C	C	
Fridays	C	C	C	C	C																				
Saturdays				C	C	C	C	C	C	C															
Sundays				C	C	C	C	C	C	C	C										C	C	C	C	

Legend:

C Ramp may be closed completely

Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

The above closure can be used for a maximum of (5) times only
This chart can't be used in conjunction with chart E4

Contractor and the Engineer shall coordinate the above closure with the CHP officials at the Truck Scales Station and the US Customs Officials when working within (2) miles of the Truck Scales Station

NOTE: When an Off-ramp is closed completely, place a PCMS (Portable Changeable Message Sign) in the direction of travel allowing the traffic the option to use the preceding Off-ramp and warning them of the ramp closure ahead.

Replace "Reserved" in section 12-4.05H with:

Chart no. H1
Road / City / Surface Street - Lane Requirements

County: SD	Route/Direction: EB/WB Basilone Rd. EB/WB Cristianitos Rd. EB/WB Las Pulgas Rd.	PM:

Closure limits: At Rte. 5

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	R	R	R	R	R																R	R	R	R	
Fridays	R	R	R	R	R																				
Saturdays				R	R	R	R	R	R	R															
Sundays				R	R	R	R	R	R	R	R										R	R	R	R	

Legend:

R	Provide at least 1 through traffic lane, not less than 10 feet in width, for use by both directions of travel (Reversing Control)
	Work allowed within the highway where shoulder or lane closure is not required

REMARKS:

1-Contractor and the Engineer shall coordinate the above closure with Camp Pendleton and the San Onofre Nuclear Generating Station

2-Contrator and the Engineer shall coordinate the above closure with Caltrans' District-12 Traffic Manager and Public Affairs' Office

NOTE: When Reverse Traffic Control is used.
1. Close one traffic lane and stop public traffic for periods not to exceed ten minutes.

Add section 12-4.05J:

12-4.05J TEMPORARY SHUTTLE VAN SERVICE

12-4.05J(1) GENERAL

Provide a temporary shuttle van service for transporting cyclists and cyclist's equipment during shoulder closure on Interstate 5 in both the North and South Direction at Oceanside Harbor parking lot, Las Pulgas and Basilone interchanges.

12-4.05J(2) MATERIALS

Not Used

12-4.05J(3) CONSTRUCTION

The service must operate as follows:

1. Furnish a 6 to 8 passenger van with qualified and experienced operators, as required by Federal, State, and local laws. The van must also be equipped to safely and securely carry 6 to 8 bicycles, including tandem bicycles, hand cycles, and recumbent bicycles.
2. The shuttle route and planned stops must follow the Camp Pendleton bike path and bike route along Interstate 5 as approved by the Engineer. The Camp Pendleton bike path and bike route begins in Oceanside at Harbor Dr. and terminates at Cristianitos Rd. The shuttle must use the pre-designated pick up and drop off locations at Oceanside Harbor parking lot, Las Pulgas Rd. and Basilone Interchanges.
3. The shuttle route must connect to the existing Camp Pendleton bike path and bike route along Interstate 5.
4. The temporary shuttle van service must provide timely service with waiting no longer than 45 minutes for transport. An on call system must be implemented and an advance reservation system may be employed
5. The service must be available when construction activities impact the Camp Pendleton bike path and bike route for the duration of the contract.
6. The service must be free to the public/passengers.
7. Maintain required insurances applicable to operate such service as required, and provide a copy to the Engineer.
8. Secure all permits and licenses to operate the service for the duration of the contract and provide a copy to the Engineer.
9. For any bicycle related issues please contact the District Bicycle and Pedestrian Coordinator at 619-688-2597.
10. This route is part of the Pacific Coast Bicycle Route. Please contact the Adventure Cycling Association (800) 755-2453, to notify them of bicycle facility closures. Also notify the San Diego County Bicycle Coalition (858) 487-6063, the Orange County Bicycle Coalition (949) 492-5737, and the Oceanside Bicycle and Pedestrian Committee (760) 672-2670.

12-4.05J(4) Payment

Signs required for temporary shuttle van service are paid as construction area signs.

Providing a temporary shuttle van service for transporting cyclists and cyclist's equipment is change order work.

Replace section 12-5 with:

12-5 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE

12-5.01 GENERAL

Section 12-5 includes specifications for closing traffic lanes, ramps, or a combination, with stationary and moving lane closures on multilane highways and 2-lane, 2-way highways and reducing the posted speed limit as shown on the plans. The traffic control system for a lane closure or a ramp closure must comply with the details shown.

Traffic control system includes signs.

12-5.02 MATERIALS

Vehicles equipped with attenuators must comply with section 12-3.13 of the special provisions.

Speed reduction sign panels must be Type VI, Elastomeric (Roll-Up) High-Intensity, without Adhesive, as specified in the Authorized Material List.

12-5.03 CONSTRUCTION

12-5.03A General

During traffic striping and pavement marker placement using bituminous adhesive, control traffic with a stationary or a moving lane closure. During other activities, control traffic with stationary lane closures.

Whenever components of the traffic control system are displaced or cease to operate or function as specified from any cause, immediately repair the components to the original condition or replace the components and restore the components to the original location.

12-5.03B Stationary Lane Closures

For a stationary lane closure, ramp closure, or a combination, made only for the work period, remove the components of the traffic control system from the traveled way and shoulder, except for portable delineators placed along open trenches or excavation adjacent to the traveled way at the end of each work period. You may store the components at selected central locations designated by the Engineer within the limits of the highway.

Each vehicle used to place, maintain, and remove components of a traffic control system on a multilane highway must be equipped with a Type II flashing arrow sign that must be in operation whenever the vehicle is being used for placing, maintaining, or removing the components. Vehicles equipped with a Type II flashing arrow sign not involved in placing, maintaining, or removing the components if operated within a stationary-type lane closure must display only the caution display mode. The sign must be controllable by the operator of the vehicle while the vehicle is in motion. If a flashing arrow sign is required for a lane closure, the flashing arrow sign must be operational before the lane closure is in place.

12-5.03C Moving Lane Closures

A changeable message sign used in a moving lane closure must comply with section 12-3.12 except the sign must be truck-mounted. The full operational height to the bottom of the sign may be less than 7 feet above the ground but must be as high as practicable.

A flashing arrow sign used in a moving lane closure must be truck-mounted. Operate the flashing arrow sign in the caution display mode whenever it is being used on a 2-lane, 2-way highway.

12-5.03D Speed Reduction

Regulatory speed must be reduced and implemented at all times when lanes or shoulders are closed and must conform to the details shown on the plans. Conflicting speed limits must not be allowed in a speed reduction zone.

Portable changeable message signs must display the message shown to advise the traveling public of speed reduction.

At the end of each work period, components for speed reduction must be removed from the traveled way and shoulder. Existing permanent speed limit signs and all applicable advisory/warning speed signs must also be uncovered at the end of each work period.

12-5.04 PAYMENT

Traffic control system for lane closure is paid for as traffic control system. Flagging costs are paid for as specified in section 12-1.03.

The requirements in section 4-1.05 for payment adjustment do not apply to traffic control system. Adjustments in compensation for traffic control system will be made for an increase or decrease in traffic control work if ordered and will be made on the basis of the cost of the necessary increased or decreased traffic control. The adjustment will be made on a force account basis for increased work and estimated on the same basis in the case of decreased work.

A traffic control system required by change order work is paid for as a part of the change order work.

Replace section 12-8 with:

12-8 TEMPORARY PAVEMENT DELINEATION

12-8.01 GENERAL

Section 12-8 includes specifications for placing, applying, maintaining, and removing temporary pavement delineation.

Temporary signing for no-passing zones must comply with section 12-3.06.

Temporary painted traffic stripes and painted pavement markings used for temporary delineation must comply with section 84-3.

12-8.02 MATERIALS

12-8.02A General

Not Used

12-8.02B Temporary Lane Line and Centerline Delineation

Temporary pavement markers must be the same color as the lane line or centerline markers being replaced. Temporary pavement markers must be temporary pavement markers on the Authorized Material List for short-term day/night use, 14 days or less, or long-term day/night use, 180 days or less. Place temporary pavement markers under the manufacturer's instructions.

12-8.02C Temporary Edge Line Delineation

On multilane roadways, freeways, and expressways open to traffic where edge lines are obliterated and temporary pavement delineation to replace those edge lines is not shown, provide temporary pavement delineation for:

1. Right edge lines consisting of (1) a solid 4-inch wide traffic stripe, paint or tape, of the same color as the stripe being replaced, (2) traffic cones, or (3) portable delineators or channelizers placed longitudinally at intervals not exceeding 100 feet
2. Left edge lines consisting of (1) solid 4-inch wide traffic stripe, paint or tape, of the same color as the stripe being replaced, (2) traffic cones, (3) portable delineators or channelizers placed longitudinally at intervals not exceeding 100 feet, or (4) temporary pavement markers placed longitudinally at intervals not exceeding 6 feet

12-8.02D Temporary Traffic Stripe Tape

Not Used

12-8.02E Temporary Traffic Stripe Paint

You may use one of the types of temporary removable traffic stripe tape on the Authorized Material List instead of temporary traffic stripe paint.

12-8.02F Temporary Pavement Marking Tape

Not Used

12-8.02G Temporary Pavement Marking Paint

Not Used

12- 8.02H Temporary Pavement Markers

Temporary pavement markers must be one of the temporary pavement markers on the Authorized Material List for long term day/night use, 180 days or less.

12-8.03 CONSTRUCTION

12-8.03A General

Wherever work activities obliterate pavement delineation, place temporary or permanent pavement delineation before opening the traveled way to traffic. Place lane line and centerline pavement delineation for traveled ways open to traffic. On multilane roadways, freeways and expressways, place edge line delineation for traveled ways open to traffic.

Establish the alignment for the temporary pavement delineation including required lines or markers. Surfaces to receive an application of paint or removable traffic tape must be dry and free of dirt and loose material. Do not apply temporary pavement delineation over existing pavement delineation or other temporary pavement delineation. Maintain temporary pavement delineation until it is superseded or you replace it with a new pattern of temporary pavement delineation or permanent pavement delineation.

When the Engineer determines the temporary pavement delineation is no longer required for the direction of traffic, remove the temporary pavement markers, underlying adhesive, and removable traffic tape from the final layer of surfacing and from the existing pavement to remain in place. Remove temporary pavement delineation that conflicts with any subsequent or new traffic pattern for the area.

12-8.03B Temporary Lane line and Centerline Delineation

Whenever lane lines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown, the minimum lane line and centerline delineation must consist of temporary pavement markers placed longitudinally at intervals not exceeding 24 feet. For temporary pavement markers on the Authorized Material List for long-term day/night use, 180 days or less, cement the markers to the surfacing with the adhesive recommended by the manufacturer except do not use epoxy adhesive to place the pavement markers in areas where removal of the markers will be required.

For temporary lane line or centerline delineation consisting entirely of temporary pavement markers on the Authorized Material List for short-term day/night use, 14 days or less, place the markers longitudinally at intervals not exceeding 24 feet. Do not use the markers for more than 14 days on lanes opened to traffic. Place the permanent pavement delineation before the end of the 14 days. If the permanent pavement delineation is not placed within the 14 days, replace the temporary pavement markers with additional temporary pavement delineation equivalent to the pattern specified or shown for the permanent pavement delineation for the area. The Department does not pay for the additional temporary pavement delineation.

12-8.03C Temporary Edge Line Delineation

You may apply temporary painted traffic stripe where removal of a 4-inch wide traffic stripe is not required.

The Engineer determines the lateral offset for traffic cones, portable delineators, and channelizers used for temporary edge line delineation. If traffic cones or portable delineators are used for temporary pavement delineation for edge lines, maintain the cones or delineators during hours of the day when the cones or delineators are being used for temporary edge line delineation.

Channelizers used for temporary edge line delineation must be an orange surface-mounted type. Cement channelizer bases to the pavement under section 85 for cementing pavement markers to pavement except do not use epoxy adhesive to place channelizers on the top layer of the pavement. Channelizers must be one of the 36-inch, surface-mounted types on the Authorized Material List.

Remove the temporary edge line delineation when the Engineer determines it is no longer required for the direction of traffic.

12-8.03D Temporary Traffic Stripe Tape

Apply temporary traffic stripe tape under the manufacturer's instructions. Slowly roll the tape with a rubber-tired vehicle or roller to ensure complete contact with the pavement surface. Apply the tape straight on a tangent alignment and on a true arc on a curved alignment. Do not apply the tape when the air or pavement temperature is less than 50 degrees F unless the installation procedures are authorized beforehand.

The temporary traffic stripe tape must be complete in place at the location shown before opening the traveled way to traffic.

12-8.03E Temporary Traffic Stripe Paint

Apply 1 or 2 coats of temporary traffic stripe paint for new or existing pavement.

The painted temporary traffic stripe must be complete in place at the location shown before opening the traveled way to traffic. Remove temporary traffic stripe when the Engineer determines it is no longer required for the direction of traffic.

12-8.03F Temporary Pavement Marking Tape

Not Used

12-8.03G Temporary Pavement Marking Paint

Not Used

12- 8.03H Temporary Pavement Markers

Place temporary pavement markers under the manufacturer's instructions. Cement the markers to the surfacing with the manufacturer's recommended adhesive, except do not use epoxy adhesive in areas where removal of the pavement markers is required.

You may use retroreflective pavement markers specified in section 85 instead of temporary pavement markers for long term day/night use, 180 days or less, except to simulate patterns of broken traffic stripe. Retroreflective pavement markers used for temporary pavement markers must comply with section 85, except the waiting period before placing pavement markers on new HMA surfacing as specified in section 85-1.03 does not apply. Do not use epoxy adhesive to place pavement markers in areas where removal of the pavement markers is required.

Temporary pavement markers must be complete in place before opening the traveled way to traffic.

12-8.04 PAYMENT

Not Used

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13 WATER POLLUTION CONTROL

Add to section 13-3.01A:

The project is risk level 1.

Replace 1st paragraph of section 13-6.03C with:

Provide temporary drainage inlet protection around drainage inlets as changing conditions require. Drainage inlet protection must beType 3A or Type 3B, as appropriate for conditions around the drainage inlet.

Add to section 13-10.03A:

You may place gravel-filled bags within a shoulder area without Type K temporary railing under any of the following conditions:

1. The section of roadway with the shoulder is not open to public traffic.
2. The gravel-filled bags are;
   A. Beyond 30 feet from the edge of traveled way for freeways and expressways, or
   B. Beyond 20 feet from the edge of traveled way for conventional highways.
3. The gravel-filled bags on the shoulder are within a temporary lane closure and the bags are removed prior to the lane closure being removed.

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14 ENVIRONMENTAL STEWARDSHIP

Add to section 14-1.02A:

An ESA exists on this project.

Before start of work, protect the ESA by installing Type ESA temporary fence.

Replace section 14-11.09 with:

14-11.09 TREATED WOOD WASTE

14-11.09A General

14-11.09A(1) Summary

Section 14-11.09 includes specifications for handling, storing, transporting, and disposing of treated wood waste (TWW).

Wood removed from metal beam guard railing and barrier is TWW. Manage TWW under 22 CA Code of Regs, Div. 4.5, Chp. 34.

14-11.09A(2) Submittals

For disposal of TWW, submit as an informational submittal a copy of each completed shipping record and weight receipt within 5 business days.

14-11.09B Materials

Not Used

14-11.09C Construction

14-11.09C(1) General

Not Used

14-11.09C(2) Training

Provide training to personnel who handle TWW or may come in contact with TWW. Training must include:

1. Applicable requirements of 8 CA Code of Regs
2. Procedures for identifying and segregating TWW
3. Safe handling practices
4. Requirements of 22 CA Code of Regs, Div. 4.5, Chp. 34
5. Proper disposal methods

Maintain records of personnel training for 3 years.

14-11.09C(3) Storage

Store TWW before disposal using the following methods:

1. Elevate on blocks above a foreseeable run-on elevation and protect from precipitation for no more than 90 days.
2. Place on a containment surface or pad protected from run-on and precipitation for no more than 180 days.
3. Place in water-resistant containers designed for shipping or solid waste collection for no more than 1 year.
4. Place in a storage building as defined in 22 CA Code of Regs, Div. 4.5, Chp. 34, § 67386.6(a)(2)(C).

Prevent unauthorized access to TWW using a secured enclosure such as a locked chain-link-fenced area or a lockable shipping container located within the job site.

Resize and segregate TWW at a location where debris from the operation including sawdust and chips can be contained. Collect and manage the debris as TWW.

Provide water-resistant labels that comply with 22 CA Code of Regs, Div. 4.5, Chp. 34, §67386.5, to clearly mark and identify TWW and accumulation areas. Labels must include:

1. Caltrans, District number, Construction, Construction Contract number
2. District office address
3. Engineer's name, address, and telephone number
4. Contractor's contact name, address and telephone number
5. Date placed in storage

14-11.09C(4) Transporting and Disposal

Before transporting TWW, obtain an agreement from the receiving facility that the TWW will be accepted. Protect shipments of TWW from loss and exposure to precipitation. For projects with 10,000 lb or more of TWW, request a generator's EPA Identification Number at least 5 business days before the 1st shipment. Each shipment must be accompanied by a shipping record such as a bill of lading or invoice that includes:

1. Caltrans with district number
2. Construction Contract number
3. District office address
4. Engineer's name, address, and telephone number
5. Contractor's contact name and telephone number
6. Receiving facility name and address
7. Waste description: Treated Wood Waste with preservative type if known or unknown/mixture
8. Project location
9. Estimated quantity of shipment by weight or volume
10. Date of transport
11. Date of receipt by the receiving TWW facility
12. Weight of shipment as measured by the receiving TWW facility
13. Generator's EPA Identification Number for projects with 10,000 lb or more of TWW

The shipping record must be at least a 4-part carbon or carbonless 8-1/2-by-11-inch form to allow retention of copies by the Engineer, transporter, and disposal facility.

Dispose of TWW at an approved TWW facility. A list of currently approved TWW facilities is available at:

http://www.dtsc.ca.gov/HazardousWaste/upload/lanfillapr11pdated1.pdf

Dispose of TWW within:

1. 90 days of generation if stored on blocks
2. 180 days of generation if stored on a containment surface or pad
3. 1 year of generation if stored in a water-resistant container or within 90 days after the container is full, whichever is shorter
4. 1 year of generation if storing in a storage building as defined in 22 CA Code of Regs, Div. 4.5, Chp. 34, § 67386.6(a)(2)(C)

14-11.09D Payment

Not Used

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15 EXISTING FACILITIES

Replace section 15-1.03B with:

15-1.03B Residue Containing Lead from Paint and Thermoplastic

Residue from grinding or cold planing contains lead from paint and thermoplastic. The average lead concentrations are less than 1,000 mg/kg total lead and 5 mg/L soluble lead. This residue:

1. Is a nonhazardous waste
2. Does not contain heavy metals in concentrations that exceed thresholds established by the Health and Safety Code and 22 CA Code of Regs
3. Is not regulated under the Federal Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 et seq.

Submit a lead compliance plan under section 7-1.02K(6)(j)(ii).

Payment for a lead compliance plan is not included in the payment for existing facilities work.

Payment for handling, removal, and disposal of grinding or cold planing residue that is a nonhazardous waste is included in the payment for the type of removal work involved.

Replace section 15-2.02B(3) with:

15-2.02B(3) Cold Planing Asphalt Concrete Pavement

15-2.02B(3)(a) General

Schedule cold planing activities to ensure that cold planing, placement of HMA, and reopening the area to traffic is completed during the same work shift.

If you do not complete HMA placement before opening the area to traffic, you must:

1. Construct a temporary HMA taper to the level of the existing pavement
2. Place HMA during the next work shift
3. Submit a corrective action plan that shows you will complete cold planing and placement of HMA in the same work shift. Do not restart cold planing activities until the Engineer approves the corrective action plan.

15-2.02B(3)(b) Materials

Use the same quality of HMA for temporary tapers that is used for the HMA overlay or comply with the specifications for minor HMA in section 39.

15-2.02B(3)(c) Construction

15-2.02B(3)(c)(i) General

Do not use a heating device to soften the pavement.

The cold planing machine must be:

1. Equipped with a cutter head width that matches the planing width. If the cutter head width is wider than the cold plane area shown, submit to the Engineer a request for using a wider cutter head. Do not cold plane unless the Engineer approves your request.
2. Equipped with automatic controls for the longitudinal grade and transverse slope of the cutter head and:
   2.1. If a ski device is used, it must be at least 30 feet long, rigid, and a 1-piece unit. The entire length must be used in activating the sensor.
   2.2. If referencing from existing pavement, the cold planing machine must be controlled by a self-contained grade reference system. The system must be used at or near the centerline of the roadway. On the adjacent pass with the cold planing machine, a joint-matching shoe may be used.
3. Equipped to effectively control dust generated by the planing operation
4. Operated so that no fumes or smoke is produced.

Replace broken, missing, or worn machine teeth.

15-2.02B(3)(c)(ii) Grade Control and Surface Smoothness

Furnish, install, and maintain grade and transverse slope references.

The depth, length, width, and shape of the cut must be as shown or as ordered. The final cut must result in a neat and uniform surface. Do not damage the remaining surface.

The completed surface of the planed asphalt concrete pavement must not vary more than 0.02 foot when measured with a 12-foot straightedge parallel with the centerline. With the straightedge at right angles to the centerline, the transverse slope of the planed surface must not vary more than 0.03 foot.

Where lanes are open to traffic, the drop-off of between adjacent lanes must not be more than 0.15 foot.

15-2.02B(3)(c)(iii) Temporary HMA Tapers

If a drop-off between the existing pavement and the planed area at transverse joints cannot be avoided before opening to traffic, construct a temporary HMA taper. The HMA temporary taper must be:

1. Placed to the level of the existing pavement and tapered on a slope of 30:1 (horizontal:vertical) or flatter to the level of the planed area
2. Compacted by any method that will produce a smooth riding surface

Completely remove temporary tapers before placing permanent surfacing.

15-2.02B(3)(c)(iv) Remove Planed Material

Remove cold planed material concurrent with planing activities so that removal does not lag more than 50 feet behind the planer.

15-2.02B(3)(d) Payment

Payment for removal of pavement markers, thermoplastic traffic stripe, painted traffic stripe, and pavement marking within the area of cold planing is included in the payment for cold plane asphalt concrete pavement of the types shown in the Bid Item List.

Replace section 15-2.02C(2) with:

15-2.02C(2) Remove Traffic Stripes and Pavement Markings Containing Lead

Residue from removing traffic stripes and pavement markings contains lead from the paint or thermoplastic. The average lead concentrations are less than 1,000 mg/kg total lead and 5 mg/L soluble lead. This residue:

1. Is a nonhazardous waste
2. Does not contain heavy metals in concentrations that exceed thresholds established by the Health and Safety Code and 22 CA Code of Regs
3. Is not regulated under the Federal Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 et seq.

Submit a lead compliance plan under section 7-1.02K(6)(j)(ii).

Payment for a lead compliance plan is not included in the payment for existing facilities work.

Payment for handling, removal, and disposal of pavement residue that is a nonhazardous waste is included in the payment for the type of removal work involved.

Replace section 15-2.02F with:

15-2.02F Remove Asphalt Concrete Dikes

Before removing the dike, cut the outside edge of the asphalt concrete on a neat line and to a minimum depth of 0.17 foot. Alternatively, remove the dike by cold planing, and saw cutting is not required.

Delete the 6th paragraph of section 15-3.01.

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DIVISION III GRADING

19 EARTHWORK

Add to section 19-7.02C:

The portion of imported borrow placed within 4 feet of the finished grade must have a resistance (R-Value) of at least 10.

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DIVISION IV SUBBASES AND BASES

28 CONCRETE BASES

Replace section 28-3 with:

28-3 RAPID STRENGTH CONCRETE BASE

28-3.01 GENERAL

28-3.01A Summary

Section 28-3 includes specifications for constructing rapid strength concrete base (RSCB).

28-3.01B Definitions

final set time: Elapsed time after initial contact of cement and water required for the mortar sieved from the concrete to reach a penetration resistance of 4,000 psi determined under ASTM C 403.

early age: Any age less than 10 times the RSCB final set time.

opening age: Age at which the RSCB achieves the specified strength for opening to traffic, including construction traffic.

28-3.01C Submittals

At least 10 days before placing RSCB, submit a mix design that includes:

1. Opening age
2. Proposed aggregate gradation
3. Proportions of hydraulic cement and aggregate
4. Types and amounts of chemical admixtures
5. Maximum time allowed between batching and placing
6. Final set time
7. Any special instructions or conditions such as water temperature requirements

Submit aggregate samples split from samples taken during test strip construction.

At least 45 days before placing RSCB, submit a sample of cement from each proposed lot and samples of proposed admixtures in the quantities ordered.

During RSCB activities, submit uniformity reports for hydraulic cement at least once every 30 days to the Transportation Laboratory, Attention: Cement Laboratory. Uniformity reports must comply with ASTM C 917, except testing age and water content may be modified to suit the particular material.

At least 20 days before placing RSCB, submit a QC plan.

28-3.01D Quality Control and Assurance

28-3.01D(1) General

Schedule a preoperation conference at a mutually agreed time and place to meet with the Engineer. Make arrangements for the conference facility. Discuss the project specifications and methods of performing each item of work. Items discussed must include the processes for:

1. Production
2. Transportation
3. Placement
4. QC plan, if required
5. Contingency plan
6. QC sampling and testing
7. Acceptance criteria

If QC or acceptance testing indicate non-compliance, stop RSCB placement and before resuming activities:

1. Inform the Engineer of the adjustments you will make
2. Reprocess, remedy, or replace the noncompliant RSCB until it complies with specifications
3. Construct a new test strip of RSCB with proposed adjustments demonstrating ability to comply with the specifications
4. Obtain authorization

Beams for modulus of rupture testing must be fabricated and tested under California Test 524. The beams may be fabricated using an internal vibrator under ASTM C 31. For each test, 3 beam specimens must be fabricated and the test results averaged. No single test represents more than that day's production or 130 cu yd, whichever is less.

For early age testing, beams must be cured so the monitored temperatures in the beams and the test strip are always within 5 degrees F. The internal temperatures of the RSCB and early age beams must be monitored and recorded at intervals of at least 5 minutes. Thermocouples or thermistors connected to strip-chart recorders or digital data loggers must be installed to monitor the temperatures. Temperature recording devices must be accurate to within ±2 degrees F. Until early age testing is completed, internal temperatures must be measured at 1 inch from the top, 1 inch from the bottom, and no closer than 3 inches from any edge.

For other age testing, beams must be cured under California Test 524 except beams must be placed into sand at a time that is from 5 to 10 times the final set time, or 24 hours, whichever is earlier.

Preoperation conference attendees must sign an attendance sheet provided by the Engineer. The preoperation conference must be attended by your:

1. Project superintendent
2. Project manager
3. QC manager
4. RSCB placement foreman
5. RSCB plant manager
6. RSCB plant operator
7. Plant inspector
8. RSCB placement machine operators
9. Inspectors
10. Samplers
11. Testers
12. Subcontractor's workers

Do not start RSCB placement activities until the listed personnel have attended the preoperation conference.

28-3.01D(2) Quality Control Managers

Designate a lead QC manager to administer the QC plan and assistant QC managers. The lead QC manager must hold current American Concrete Institute (ACI) certification as a "Concrete Field Testing Technician-Grade I" and a "Concrete Laboratory Testing Technician-Grade II." Assistant QC managers must hold current ACI certification as a "Concrete Field Testing Technician-Grade I" and either a "Concrete Laboratory Testing Technician-Grade I" or a "Concrete Laboratory Testing Technician-Grade II." The Department qualifies the QC samplers and testers through the Independent Assurance Program (IAP) for the sampling and testing they perform.

The QC manager must not be a member of this project's production or placement crews, an inspector, or a tester. A QC manager must have no duties during the production and placement of RSCB except those specified.

The QC manager responsible for the production period involved must review and sign the sampling, inspection, and test reports before submittal. At least 1 QC manager must be present for:

1. Each stage of mix design
2. Test strip placement
3. Production and construction of RSCB
4. Meetings with the Engineer relating to production, placement, or testing

28-3.01D(3) Quality Control Plan

The QC plan must comply with section 40-1.01D(4) except do not include bar reinforcement, dowel bars, tie bars, joint seals, and corrective action to be taken if penetration or air content measurements are outside action or suspension limits.

28-3.01D(4) Test Strip

Before starting work on RSCB, complete a test strip. The test strip must demonstrate that you are capable of producing RSCB in compliance with the specifications within the specified time periods including delivery, placement, finishing, and curing times, and under similar atmospheric and temperature conditions expected during placement operations.

Construct test strips using the authorized mix design. Do not construct a test strip until the QC plan is authorized and until designated personnel have attended a pre-operation conference.

Test strip must be at least 100 feet long and the width and depth dimensions shown.

Place the test strip at an agreed upon location near the job site. You may use the test strip in the work if it is placed where it will not be covered during the evaluation period. Do not use test strips in the work unless authorized.

Within 20 minutes after RSCB delivery for the test strip, fabricate test beams. Use the beams to determine modulus of rupture values.

The test strip must have an opening age modulus of rupture of not less than 400 psi and a 7-day modulus of rupture of not less than 600 psi.

After test strip evaluation, dispose of test strip test beams. If the test strip is not used in the work, remove the test strip.

28-3.01D(5) Quality Control Testing

Provide a testing laboratory to perform quality control tests. Maintain sampling and testing equipment in proper working condition. Perform sampling under California Test 125.

Testing laboratories and testing equipment must comply with the Department's Independent Assurance Program.

Perform quality control sampling, testing, and inspection throughout RSCB production and placement. Notify the Engineer at least 2 business days before any sampling and testing. Submit testing results within 15 minutes of testing completion. Record inspection, sampling, and testing on the forms accepted with the QC plan and submit them within 48 hours of completion of each day of production and within 24 hours of 7-day modulus of rupture tests. Perform testing and sampling for the quality characteristics shown in the following table:

Quality Control Requirements

Quality characteristic	Test method	Minimum sampling and testing frequency
Cleanness value	California Test 227	1 per 650 cubic yards but not less than 1 per day of production
Sand equivalent	California Test 217	1 per 650 cubic yards but not less than 1 per day of production
Aggregate gradation	California Test 202	1 per 650 cubic yards but not less than 1 per day of production
Air content[a]	California Test 504	1 per 130 cubic yards but not less than twice per day of production
Yield	California Test 518	2 per day of production
Penetration	California Test 533	1 per 2 hours of production
Unit weight	California Test 518	2 per day of production
Moisture[b]	California Test 223 or 226	1 per day of production

[a]Testing required in freeze-thaw areas only.
[b]Calibrate moisture meter weekly

During placement of RSCB, fabricate beams and test modulus of rupture for opening age and 7 days within the first 30 cu yd, at least once every 130 cu yd, and within the final truckload. Opening age tests must be performed in the presence of the Engineer.

RSCB must have an opening age modulus of rupture of not less than 400 psi and a 7-day modulus of rupture of not less than 600 psi.

28-3.01D(6) Acceptance Criteria

RSCB acceptance is based on 7-day modulus of rupture.

RSCB must develop a minimum modulus of rupture of 600 psi after 7 days from placement.

28-3.02 MATERIALS

28-3.02A General

Not Used

28-3.02B Rapid Strength Concrete Base

Concrete for RSCB must be RSC.

For batches with a volume of 1 cu yd or more, comply with one of the following methods:

1. Batch the ingredients at a central batch plant and charge them into a mixer truck for transportation to the pour site.
2. Batch the ingredients except the cement at a central batch plant and charge them into a mixer truck for transportation to a cement silo and weigh system, which must proportion cement for charging into the mixer truck.
3. Batch ingredients except the cement at a central batch plant and charge them into a mixer truck for transportation to a location where pre-weighed containerized cement is added to the mixer truck. The cement pre-weighing operation must use a platform scale. The platform scale must have a maximum capacity of 2.75 tons with a maximum graduation size of 1 pound. Pre-weigh cement into a fabric container. The minimum amount of cement to be proportioned into any single container must be 1/2 of the total amount required for the load of RSCB being produced.
4. Proportion cement, water, and aggregate volumetrically.

For the combined aggregate grading, the difference between the percent passing the 3/8-inch sieve and the percent passing the No. 8 sieve must be at least 16 percent of the total aggregate.

You may use Type C accelerating and Type E accelerating and water reducing chemical admixtures.

28-3.02C Curing Seal

Asphaltic emulsion must be Grade RS1 or SS1.

28-3.03 CONSTRUCTION

28-3.03A General

Not Used

28-3.03B Subgrade Preparation

Immediately before placing RSCB, the subgrade to receive the base must comply with the specified compaction and elevation tolerances and be:

1. Free of loose and extraneous material
2. Uniformly moist, but free of standing or flowing water

28-3.03C Placing, Spreading, and Shaping

You may place RSCB in 2-lane monolithic segments. A longitudinal joint is not required in the center of the concrete base.

Place RSCB under section 40-1.03H except the 3rd paragraph of 40-1.03H(1) does not apply.

Construct transverse contraction joints at 30-foot intervals. Cut a groove in the RSCB with a power driven concrete saw. Grooves for longitudinal and transverse contraction joints must be the minimum width possible for the type of saw used. Immediately wash slurry from the joint with water at a pressure less than 100 psi.

The RSCB finished surface must not vary more than 1/4 inch from the bottom of a 12-foot long straightedge placed parallel with the center line.

Do not texture RSCB surface. Finish RSCB to a smooth surface free from mortar ridges and other projections.

28-3.03D Curing

Begin curing work as soon as free water leaves the RSCB surface.

Cure RSCB by applying a curing seal of asphaltic emulsion under section 94. Apply curing seal at a rate from 0.15 to 0.25 gal/sq yd. The Engineer determines the exact application rate. If you damage applied curing seal, immediately cover the damaged area with additional curing seal at your expense. Do not remove curing seal until surfacing is placed.

28-3.03E Surfaces Not Within Tolerance

RSCB must be within 0.05 foot of the grade established be the Engineer. Remove and replace hardened RSCB with a surface higher than 0.05-foot above the grade established by the Engineer with RSCB, or if approved, high areas may be ground until the surface of RSCB conforms to the tolerances specified. Grinding equipment must be equipped with diamond carborundum blades. Clean the ground area of RSCB that is to be covered with pavement of all foreign material and grinding residue as soon as any free water has left the surface and apply curing seal.

Where the surface of RSCB is lower than 0.05 foot from the grade established by the Engineer, remove the base and replace it with RSCB or, if authorized, fill low areas with pavement concrete concurrent with the paving operation.

28-3.04 PAYMENT

Rapid strength concrete base is measured from the dimensions shown.

The Engineer adjusts payment for RSCB for modulus of rupture as follows:

1. Payment for RSCB with a 7-day modulus of rupture of 600 psi or greater is not adjusted.
2. Payment for RSCB with a 7-day modulus of rupture less than 500 psi is not adjusted and no payment is made. Remove and replace this RSCB at your expense with RSCB that complies with the specifications.
3. Payment for RSCB with a 7-day modulus of rupture greater than or equal to 500 psi is reduced by the percentage in the pay table for the quantity represented by the tests as follows:

Percentage Pay Table

7-day modulus of rupture (psi)			
Greater than or equal to 600	Less than 600 and greater than or equal to 550	Less than 550 and greater than or equal to 500	Less than 500
100%	95%	90%	0%

Replace section 28-4 with:

28-4 LEAN CONCRETE BASE RAPID SETTING

28-4.01 GENERAL

28-4.01A Summary

Section 28-4 includes specifications for constructing lean concrete base rapid setting (LCBRS).

28-4.01B Definitions

final set time: Elapsed time after initial contact of cement and water required for the mortar sieved from the concrete to reach a penetration resistance of 4,000 psi determined under ASTM C 403.

opening age: Age at which the LCBRS achieves the specified strength for opening to traffic, including construction traffic.

28-4.01C Submittals

28-4.01C(1) General

Not Used

28-4.01C(2) Mix Design

Determine the mix proportions for LCBRS and submit mix designs.

At least 10 days before placing LCBRS, submit a mix design for LCBRS that includes:

1. Opening age
2. Proposed aggregate gradation
3. Proportions
4. Types and amounts of chemical admixtures
5. Maximum time allowed between batching and placing
6. Range of ambient temperatures over which the mix design is applicable
7. Final set time
8. Test result from California Test 548 testing, if required

Submit 1 mix design for each ambient temperature variation anticipated during LCBRS placement. Each mix design must have a maximum ambient temperature range of 18 degrees F.

Submit compressive strength development data for each mix design. You may use strength development data from laboratory-prepared samples. The testing ages for strength development data must include 1 hour before opening age, opening age, 1 hour after opening age, 24 hours, and 7 days.

28-4.01C(3) Field Qualification

Submit field qualification data and test reports including:

1. Mixing date
2. Mixing equipment and procedures used
3. Batch volume in cubic yards
4. Type and source of ingredients used
5. Age and strength at time of cylinder testing

Field qualification test reports must be certified with a signature by an official in responsible charge of the laboratory performing the tests.

28-4.01D Quality Control and Assurance

28-4.01D(1) General

Stop LCBRS activities and immediately notify the Engineer whenever:

1. Any quality control or acceptance test result does not comply with the specifications
2. Visual inspection shows noncompliant LCBRS

If LCBRS activities are stopped, before resuming activities:

1. Inform the Engineer of the adjustments you will make
2. Reprocess, remedy, or replace the noncompliant LCBRS until it complies with specifications
3. Field qualify the LCBRS demonstrating ability to comply with the specifications
4. Obtain authorization

28-4.01D(2) Compressive Strength Specimens

Prepare compressive strength test specimens under California Test 540 except a vibrator under California Test 524 may be used instead of rodding. Test compressive strength specimens under California Test 521. Perform at least 1 test at opening age for each 4 hours of LCBRS placement work and within the last hour of placement work. Each test is two cylinders.

28-4.01D(3) Field Qualification

Proposed mix proportions must be field qualified before you place LCBRS. Use an American Concrete Institute (ACI) certified "Concrete Laboratory Technician, Grade I" to perform field qualification tests and calculations.

Field qualification must comply with the following:

1. Make 6 cylinders for each age under California Test 540 except a vibrator under California Test 524 may be used instead of rodding
2. Test cylinders under California Test 521 at opening age and 7 days of age
3. Perform 3 tests; each test consists of 2 cylinders
4. At opening age, the average strength for each test must be at least 180 psi and the average strength for the 3 tests must be at least 200 psi
5. At 7 days age, the average strength for each test must be at least 600 psi and the average strength for the 3 tests must be at least 725 psi

28-4.01D(4) Acceptance Criteria

LCBRS acceptance is based on compliance with LCBRS Acceptance Criteria Testing table:

LCBRS Acceptance Criteria Testing

Quality characteristic	Test method	Requirement
Compressive strength (psi at 7 days)	CT 521[a]	725

Note:
Cylinders made under California Test 540 except a vibrator under California Test 524 may be used instead of rodding

28-4.02 MATERIALS

28-4.02A General

Not Used

28-4.02B Cement

Cement must comply with cement for RSC.

28-4.02C Chemical Admixtures

Chemical admixtures must comply with chemical admixtures for concrete except you may use Type E chemical admixture. You may use citric acid or borax if you submit a written request from the cement manufacturer and a test sample.

28-4.02D Aggregates

Aggregate must comply with either of the following:

1. Section 90-1.02C except aggregate grading must comply with the aggregate grading table in section 28-2.02
2. Section 28-2.02 and the following:
   2.1. Section 28-2.01B does not apply
   2.2. Perform California Test 548 except part I

28-4.03 CONSTRUCTION

28-4.03A General

Construct LCBRS under section 28-2.03.

The pavement may be opened to traffic only after opening age of LCBRS. Subsequent paving operations may begin only after final set time of LCBRS. LCBRS must have a compressive strength of at least 450 psi before placing HMA, base, or operating equipment on it. LCBRS must have a minimum compressive strength of 200 psi at opening age and at least 725 psi at 7 days age.

28-4.03B Proportioning, Mixing, and Transporting

For batches with a volume of 1 cu yd or more, comply with one of the following methods:

1. Batch the ingredients at a central batch plant and charge them into a mixer truck for transportation to the pour site.
2. Batch the ingredients except the cement at a central batch plant and charge them into a mixer truck for transportation to a cement silo and weigh system, which must proportion cement for charging into the mixer truck.
3. Batch ingredients except the cement at a central batch plant and charge them into a mixer truck for transportation to a location where preweighed containerized cement is added to the mixer truck. The cement preweighing operation must utilize a platform scale. The platform scale must have a maximum capacity of 2.75 tons with a maximum graduation size of 1 lb. Preweigh cement into a fabric container. The minimum amount of cement to be proportioned into any single container must be 1/2 of the total amount required for the load of LCBRS being produced.
4. Proportion cement, water, and aggregate volumetrically under ASTM C 685 or section 90-3.02B.

28-4.03C Placing

You may use metal or wood side forms. Wood side forms must not be less than 1-1/2 inches thick.

After you deposit the LCBRS on the subgrade, consolidate it with high-frequency internal vibrators. Consolidate adjacent to forms and across the full pavement width. Place LCBRS as nearly as possible to its final position.

Spread and shape LCBRS with powered finishing machines supplemented by hand finishing.

After you place LCBRS, do not add water to the surface to facilitate finishing. Use surface finishing additives as recommended by the manufacturer of the cement after their use is authorized.

28-4.04 PAYMENT

Lean concrete base rapid setting is measured from the dimensions shown.

If volumetric proportioning is performed and calibration is performed more than 100 miles from the project limits, the Department deducts $1,000 for each calibration session.

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DIVISION V SURFACINGS AND PAVEMENTS

39 HOT MIX ASPHALT

Add to section 39-1.01:

Produce and place HMA Type A under the QC/QA construction process.

Produce and place RHMA-G under the Standard construction process.

Add to section 39-1.02C:

Asphalt binder used in HMA Type A must be PG 64-10.

Asphalt binder mixed with asphalt modifier and CRM for asphalt rubber binder must be PG 64-16.

Add to section 39-1.02E:

Aggregate used in HMA Type A must comply with the 1/2 inch HMA Types A and B gradation.

Aggregate for RHMA-G must comply with the 1/2 inch RHMA-G gradation.

Add to section 39-1.03B:

For the mix design of HMA Type A produced under the QC/QA construction process, determine the plasticity index of the aggregate blend under California Test 204. Choose an antistrip treatment and use the corresponding laboratory procedure for the mix design based on the antistrip treatments shown in the following table:

Antistrip Treatment Laboratory Procedures for Mix Design

Antistrip treatment	Laboratory procedure
Plasticity index from 4 to 10 [a]	
Dry hydrated lime with marination	LP-6
Lime slurry with marination	LP-7
Plasticity index less than 4	
Liquid	LP-5
Dry hydrated lime without marination	LP-6
Dry hydrated lime with marination	LP-6
Lime slurry with marination	LP-7

[a] If the plasticity index is greater than 10, do not use that aggregate blend.

For the mix design of HMA Type A produced under the QC/QA construction process, determine the tensile strength ratio under California Test 371 on untreated HMA. If the tensile strength ratio is less than 70:

1. Choose from the antistrip treatments specified based on the plasticity index
2. Test treated HMA under California Test 371
3. Treat to a minimum tensile strength ratio of 70

Determine the OBC for RHMA-G at 5.0 percent air voids under California Test 367. The OBC must be greater than or equal to 7.5 percent based on the total weight of mix.

Add to section 39-1.11D of the RSS for section 39-1.11:

Pave shoulders and median borders adjacent to the lane before opening a lane to traffic.

Replace section 39-1.16 with:

39-1.16 RUMBLE STRIPS

39-1.16A General

Construct rumble strips in the top layer of HMA surfacing by ground-in or rolled-in methods.

39-1.16B Materials

Not Used

39-1.16C Construction

Select the method and equipment for constructing ground-in indentations.

Do not construct rumble strips on structures or approach slabs.

Construct rumble strips within 2 inches of the specified alignment. The grinding equipment must be equipped with a sighting device enabling the operator to maintain the rumble strip alignment.

Indentations must comply with the specified dimensions within 0.06 inch in depth and 10 percent in length and width.

The Engineer orders grinding or removal and replacement of noncompliant rumble strips to bring them within specified tolerances. Ground surface areas must be neat and uniform in appearance.

The grinding equipment must be equipped with a vacuum attachment to remove residue from the roadbed.

Dispose of removed material.

On ground areas, apply fog seal coat under section 37-2.

39-1.16D Payment

Rumble strips are measured by the station along the length of the rumble strips without deductions for gaps between indentations.

Replace "Reserved" in section 39-1.18 with:

39-1.18A General

39-1.18A(1) Summary

Treat HMA aggregate with lime using the dry lime method either with marination or without.

39-1.18A(2) Submittals

Determine the exact lime proportions for fine and coarse virgin aggregate and submit them as part of the proposed JMF.

If marination is required, submit the averaged aggregate quality test results within 24 hours of sampling.

Submit a treatment data log from the dry lime and aggregate proportioning device in the following order:

1. Treatment date
2. Time of day the data is captured
3. Aggregate size being treated
4. HMA type and mix aggregate size
5. Wet aggregate flow rate collected directly from the aggregate weigh belt
6. Aggregate moisture content, expressed as a percent of the dry aggregate weight
7. Flow rate of dry aggregate calculated from the flow rate of wet aggregate
8. Dry lime flow rate
9. Lime ratio from the accepted JMF for each aggregate size being treated
10. Lime ratio from the accepted JMF for the combined aggregate
11. Actual lime ratio calculated from the aggregate weigh belt output, the aggregate moisture input, and the dry lime meter output, expressed as a percent of the dry aggregate weight
12. Calculated difference between the authorized lime ratio and the actual lime ratio

Each day during lime treatment, submit the treatment data log on electronic media in tab delimited format on a removable CD-ROM storage disk. Each continuous treatment data set must be a separate record using a line feed carriage return to present the specified data on 1 line. The reported data must include data titles at least once per report.

39-1.18A(3) Quality Control and Assurance

If marination is required, the QC plan must include aggregate quality control sampling and testing during lime treatment. Sample and test in compliance with minimum frequencies shown in the following table:

Aggregate Quality Control During Lime Treatment

Quality characteristic	Test method	Minimum sampling and testing frequency
Sand equivalent	California Test 217	Once per 1,000 tons of aggregate treated with lime
Percent of crushed particles	California Test 205	As necessary and as designated in the QC plan
Los Angeles Rattler	California Test 211	
Fine aggregate angularity	California Test 234	
Flat and elongated particles	California Test 235	

Note: During lime treatment, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Run tests for aggregate quality in triplicate and report test results as the average of 3 tests.

For any of the following, the Engineer orders proportioning operations stopped if you:

1. Do not submit the treatment data log
2. Do not submit the aggregate quality control data for marinated aggregate
3. Submit incomplete, untimely, or incorrectly formatted data
4. Do not take corrective actions
5. Take late or unsuccessful corrective actions
6. Do not stop treatment when proportioning tolerances are exceeded
7. Use malfunctioning or failed proportioning devices

If you stop treatment, notify the Engineer of any corrective actions taken and conduct a successful 20-minute test run before resuming treatment.

39-1.18B Materials

High-calcium hydrated lime and water must comply with section 24-2.02.

Before virgin aggregate is treated, it must comply with the aggregate quality specifications. Do not test treated aggregate for quality control except for gradation. The Department does not test treated aggregate for acceptance except for gradation.

The Engineer determines the combined aggregate gradation during HMA production after you have treated the aggregate.

Treated aggregate must not have lime balls or clods.

39-1.18C Construction

39-1.18C(1) General

Notify the Engineer at least 24 hours before the start of aggregate treatment.

Do not treat RAP.

Marinate aggregate if the plasticity index determined under California Test 204 is from 4 to 10.

If marination is required:

1. Treat and marinate coarse and fine aggregates separately.
2. Treat the aggregate and stockpile for marination only once.
3. Treat the aggregate separate from HMA production.

The lime ratio is the pounds of dry hydrated lime per 100 lb of dry virgin aggregate expressed as a percentage. Water content of slurry or untreated aggregate must not affect the lime ratio.

Aggregate gradations must have the lime ratio ranges shown in the following table:

Aggregate gradation	Lime ratio percent
Coarse	0.4–1.0
Fine	1.5–2.0
Combined	0.8–1.5

The lime ratio for fine and coarse aggregate must be within ±0.2 percent of the lime ratio in the accepted JMF. The lime ratio must be within ±0.2 percent of the authorized lime ratio when you combine the individual aggregate sizes in the JMF proportions.

Proportion dry lime by weight with a continuous operation.

The device controlling dry lime and aggregate proportioning must produce a treatment data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily treatment. The data must be a treatment activity register and not a summation. The material represented by a data set is the quantity produced 5 minutes before and 5 minutes after the capture time. For the duration of the Contract, collected data must be stored by the controller.

If 3 consecutive sets of recorded treatment data indicate deviation more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment.

If a set of recorded treatment data indicates a deviation of more than 0.4 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the material represented by that set of data in HMA.

If 20 percent or more of the total daily treatment indicates deviation of more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the day's treated aggregate in HMA.

If you stop treatment for noncompliance, you must implement corrective action and successfully treat aggregate for a 20-minute period. Notify the Engineer before beginning the 20-minute treatment period.

If you use a batch-type proportioning operation for HMA production, control proportioning in compliance with the specifications for continuous mixing plants. Use a separate dry lime aggregate treatment operation from HMA batching operations including:

1. Pugmill mixer
2. Controller
3. Weigh belt for the lime
4. Weigh belt for the aggregate

If using a continuous mixing operation for HMA without lime marinated aggregates, use a controller that measures the blended aggregate weight after any additional water is added to the mixture. The controller must determine the quantity of lime added to the aggregate from the aggregate weigh belt input in connection with the manually input total aggregate moisture, the manually input target lime content, and the lime proportioning system output. Use a continuous aggregate weigh belt and pugmill mixer for the lime treatment operation in addition to the weigh belt for the aggregate proportioning to asphalt binder in the HMA plant. If you use a water meter for moisture control for lime treatment, the meter must comply with California Test 109.

At the time of mixing dry lime with aggregate, the aggregate moisture content must ensure complete lime coating. The aggregate moisture content must not cause aggregate to be lost between the point of weighing the combined aggregate continuous stream and the dryer. Add water for mixing and coating aggregate to the aggregate before dry lime addition. Immediately before mixing lime with aggregate, water must not visibly separate from aggregate.

The HMA plant must be equipped with a bag-house dust system. Material collected in the dust system must be returned to the mix.

39-1.18C(2) Mixing Dry Lime and Aggregate

Mix aggregate, water, and dry lime with a continuous pugmill mixer with twin shafts. Immediately before mixing lime with aggregate, water must not visibly separate from the aggregate. Store dry lime in a uniform and free-flowing condition. Introduce dry lime to the pugmill in a continuous operation. The introduction must occur after the aggregate cold feed and before the point of proportioning across a weigh belt and the aggregate dryer. Prevent loss of dry lime.

If marination is required, marinate treated aggregate in stockpiles from 24 hours to 60 days before using in HMA. Do not use aggregate marinated more than 60 days.

The pugmill must be equipped with paddles arranged to provide sufficient mixing action and mixture movement. The pugmill must produce a homogeneous mixture of uniformly coated aggregates at mixer discharge.

If the aggregate treatment operation is stopped longer than 1 hour, clean the equipment of partially treated aggregate and lime.

Aggregate must be completely treated before introduction into the mixing drum.

39-1.18D Payment

Not Used

Replace "Reserved" in section 39-1.19 with:

39-1.19A General

39-1.19A(1) Summary

Treat HMA aggregate with lime using the slurry method and place it in stockpiles to marinate.

39-1.19A(2) Submittals

Determine the exact lime proportions for fine and coarse virgin aggregate and submit them as part of the proposed JMF.

Submit the averaged aggregate quality test results to the Engineer within 24 hours of sampling.

Submit a treatment data log from the slurry proportioning device in the following order:

1. Treatment date
2. Time of day the data is captured
3. Aggregate size being treated
4. Wet aggregate flow rate collected directly from the aggregate weigh belt
5. Moisture content of the aggregate just before treatment, expressed as a percent of the dry aggregate weight
6. Dry aggregate flow rate calculated from the wet aggregate flow rate
7. Lime slurry flow rate measured by the slurry meter
8. Dry lime flow rate calculated from the slurry meter output
9. Authorized lime ratio for each aggregate size being treated
10. Actual lime ratio calculated from the aggregate weigh belt and the slurry meter output, expressed as a percent of the dry aggregate weight
11. Calculated difference between the authorized lime ratio and the actual lime ratio
12. Dry lime and water proportions at the slurry treatment time

Every day during lime treatment, submit the treatment data log on electronic media in tab delimited format on a removable CD-ROM storage disk. Each continuous treatment data set must be a separate record using a line feed carriage return to present the specified data on 1 line. The reported data must include data titles at least once per report.

39-1.19A(3) Quality Control and Assurance

The QC plan must include aggregate quality control sampling and testing during aggregate lime treatment. Sample and test in compliance with frequencies in the following table:

Aggregate Quality Control During Lime Treatment

Quality characteristic	Test method	Minimum sampling and testing frequency
Sand equivalent	California Test 217	Once per 1,000 tons of aggregate treated with lime
Percent of crushed particles	California Test 205	As necessary and as designated in the QC plan
Los Angeles Rattler	California Test 211	
Fine aggregate angularity	California Test 234	
Flat and elongated particles	California Test 235	

Note: During lime treatment, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Run tests for aggregate quality in triplicate and report test results as the average of 3 tests.

For any of the following, the Engineer orders proportioning operations stopped if you:

1. Do not submit the treatment data log
2. Do not submit the aggregate quality control data
3. Submit incomplete, untimely, or incorrectly formatted data
4. Do not take corrective actions
5. Take late or unsuccessful corrective actions
6. Do not stop treatment when proportioning tolerances are exceeded
7. Use malfunctioning or failed proportioning devices

If you stop treatment, notify the Engineer of any corrective actions taken and conduct a successful 20-minute test run before resuming treatment.

For the aggregate to be treated, determine the moisture content at least once during each 2 hours of treatment. Calculate moisture content under California Test 226 or 370 and report it as a percent of dry aggregate weight. Use the moisture content calculations as a set point for the proportioning process controller.

39-1.19B Materials

High-calcium hydrated lime and water must comply with section 24-2.02.

Before virgin aggregate is treated, it must comply with the aggregate quality specifications. Do not test treated aggregate for quality control except for gradation. The Engineer does not test treated aggregate for acceptance except for gradation.

The Engineer determines the combined aggregate gradation during HMA production after you have treated the aggregate. If RAP is used, the Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

Treated aggregate must not have lime balls or clods.

39-1.19C Construction

39-1.19C(1) General

Notify the Engineer at least 24 hours before the start of aggregate treatment.

Treat aggregate separate from HMA production.

Do not treat RAP.

Add lime to the aggregate as slurry consisting of mixed dry lime and water at a ratio of 1 part lime to from 2 to 3 parts water by weight. The slurry must completely coat the aggregate.

Lime treat and marinate coarse and fine aggregates separately.

Immediately before mixing lime slurry with the aggregate, water must not visibly separate from the aggregate.

Treat the aggregate and stockpile for marination only once.

The lime ratio is the pounds of dry hydrated lime per 100 lb of dry virgin aggregate expressed as a percentage. Water content of slurry or untreated aggregate must not affect the lime ratio.

The following aggregate gradations must have the lime ratio ranges shown in the following table:

Aggregate gradation	Lime ratio percent
Coarse	0.4–1.0
Fine	1.5–2.0
Combined virgin aggregate	0.8–1.5

The lime ratio for fine and coarse aggregate must be within ±0.2 percent of the lime ratio in the accepted JMF. The lime ratio must be within ±0.2 percent of the authorized lime ratio when you combine the individual aggregate sizes in the JMF proportions. The lime ratio must be determined before the addition of RAP.

If 3 consecutive sets of recorded treatment data indicate deviation more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment.

If a set of recorded treatment data indicates a deviation of more than 0.4 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the material represented by that set of data in HMA.

If 20 percent or more of the total daily treatment indicates deviation of more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the day's total treatment in HMA.

If you stop treatment for noncompliance, you must implement corrective action and successfully treat aggregate for a 20-minute period. Notify the Engineer before beginning the 20-minute treatment period.

39-1.19C(2) Lime Slurry Proportioning

Proportion lime and water with a continuous or batch operation.

The device controlling slurry proportioning must produce a treatment data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily treatment. The data must be a treatment activity register and not a summation. The material represented by the data set is the quantity produced 5 minutes before and 5 minutes after the capture time. For the Contract's duration, collected data must be stored by the controller.

39-1.19C(3) Proportioning and Mixing Lime Slurry Treated Aggregate

Treat HMA aggregate by proportioning lime slurry and aggregate by weight in a continuous operation.

Marinate treated aggregate in stockpiles from 24 hours to 60 days before using in HMA. Do not use aggregate marinated longer than 60 days.

39-1.19D Payment

Not Used

Replace "Reserved" in section 39-1.20 with:

39-1.20A General

39-1.20A(1) Summary

Treat asphalt binder with liquid antistrip (LAS) treatment to bond the asphalt binder to aggregate in HMA.

39-1.20A(2) Submittals

For LAS, submit with the proposed JMF submittal:

1. MSDS
2. One 1-pint sample
3. Infrared analysis including copy of absorption spectra

Submit a certified copy of test results and an MSDS for each LAS lot.

Submit a certificate of compliance for each LAS shipment. With each certificate of compliance, submit:

1. Your signature and printed name
2. Shipment number
3. Material type
4. Material specific gravity
5. Refinery
6. Consignee
7. Destination
8. Quantity
9. Contact or purchase order number
10. Shipment date

Submit proportions for LAS as part of the JMF submittal. If you change the brand or type of LAS, submit a new JMF.

For each job site delivery of LAS, submit one 1/2-pint sample to METS. Submit shipping documents to the Engineer. Label each LAS sampling container with:

1. LAS type
2. Application rate
3. Sample date
4. Contract number

At the end of each day's production shift, submit production data in electronic and printed media. Present data on electronic media in tab delimited format. Use line feed carriage return with 1 separate record per line for each production data set. Allow sufficient fields for the specified data. Include data titles at least once per report. For each mixing operation type, submit in order:

1. Batch mixing:
    1.1. Production date
    1.2. Time of batch completion
    1.3. Mix size and type
    1.4. Each ingredient's weight
    1.5. Asphalt binder content as a percentage of the dry aggregate weight
    1.6. LAS content as a percentage of the asphalt binder weight
2. Continuous mixing:
    2.1. Production date
    2.2. Data capture time
    2.3. Mix size and type
    2.4. Flow rate of wet aggregate collected directly from the aggregate weigh belt
    2.5. Aggregate moisture content as percentage of the dry aggregate weight
    2.6. Flow rate of asphalt binder collected from the asphalt binder meter
    2.7. Flow rate of LAS collected from the LAS meter
    2.8. Asphalt binder content as percentage of total weight of mix calculated from:
        2.8.1. Aggregate weigh belt output
        2.8.2. Aggregate moisture input
        2.8.3. Asphalt binder meter output
    2.9. LAS content as percentage of the asphalt binder weight calculated from:
        2.9.1. Asphalt binder meter output
        2.9.2. LAS meter output

39-1.20A(3) Quality Control and Assurance

For continuous mixing and batch mixing operations, sample asphalt binder before adding LAS. For continuous mixing operations, sample combined asphalt binder and LAS after the static mixer.

The Engineer orders proportioning operations stopped for any of the following if you:

1. Do not submit data
2. Submit incomplete, untimely, or incorrectly formatted data
3. Do not take corrective actions
4. Take late or unsuccessful corrective actions
5. Do not stop production when proportioning tolerances are exceeded
6. Use malfunctioning or failed proportioning devices

If you stop production, notify the Engineer of any corrective actions taken before resuming.

39-1.20B Materials

LAS-treated asphalt binder must comply with the specifications for asphalt binder in section 39-1.02C. Do not use LAS as a substitute for asphalt binder.

LAS total amine value must be 325 minimum when tested under ASTM D 2074.

Use only 1 LAS type or brand at a time. Do not mix LAS types or brands.

Store and mix LAS under the manufacturer's instruction.

39-1.20C Construction

LAS must be from 0.5 to 1.0 percent by weight of asphalt binder.

If 3 consecutive sets of recorded production data show actual delivered LAS weight is more than ±1 percent of the authorized mix design LAS weight, stop production and take corrective action.

If a set of recorded production data shows actual delivered LAS weight is more than ±2 percent of the authorized mix design LAS weight, stop production. If the LAS weight exceeds 1.2 percent of the asphalt binder weight, do not use the HMA represented by that data.

The continuous mixing plant controller proportioning the HMA must produce a production data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily production. The data must be a production activity register and not a summation. The material represented by the data is the quantity produced 5 minutes before and 5 minutes after the capture time. For the duration of the Contract, collected data must be stored by the plant controller or a computer's memory at the plant.

39-1.20D Payment

Not Used

Replace section 39-1.31 with:

39-1.31 WARM MIX ASPHALT TECHNOLOGY OPTION

39-1.31A GENERAL

39-1.31A(1) Summary

You may produce HMA Type A, Type B, or RHMA-G using an authorized warm mix asphalt (WMA) technology. For Department-authorized WMA technologies, go to the METS Web site.

AASHTO T 324 (Modified) is AASHTO T 324, "Hamburg Wheel-Track Testing of Compacted Hot Mix Asphalt (HMA)," with the following parameters:

1. Target air void content is 7 ± 1 percent
2. 4 test specimens
3. 6-inch gyratory compacted test specimen
4. Test temperature is 122 ± 2 degrees F
5. Impression measurements at every 100 passes
6. Inflection point as the number of wheel passes at the intersection of the creep slope and the stripping slope
7. Testing shut off after 25,000 passes
8. For RHMA test specimens:
   - 8.1. Superpave Gyratory Compactor ram pressure may be increased to a maximum 825 kPa
   - 8.2. Specimens may be held at a constant height for a maximum 90 minutes

HMA samples must be prepared under California Test 304, except the samples must be cured in a forced air draft oven at 275 degrees F for 4 hours ± 10 minutes.

39-1.31A(2) Definitions

WMA: HMA produced at temperatures no greater than 275 degrees F.

HMA with WMA technology: HMA produced using additives to aid with mixing and compaction of HMA produced at temperatures greater than 275 degrees F.

39-1.31A(3) Submittals

39-1.31A(3)(a) General

With the JMF submittal as specified in section 39-1.03C, submit:

1. For WMA water injection foam technology:
   1.1. Name of technology
   1.2. Laboratory Procedure LP-12 test result for foamed bitumen expansion ratio dated within 12 months of submittal
   1.3. Laboratory Procedure LP-12 test result for foamed bitumen half-life dated within 12 months of submittal
   1.4. Optimum foaming water content
   1.5. Proposed HMA production temperature range
2. For WMA additive technology:
   2.1. Name of technology
   2.2. Percent admixture by weight of binder and percent admixture by total weight of HMA as recommended by the manufacturer
   2.3. Methodology for inclusion of admixture in laboratory-produced HMA
   2.4. Proposed HMA production temperature range

The 4th and 5th paragraphs of section 39-1.03C do not apply. Instead submit:

1. California Test 371 test results for dry strength for untreated plant-produced HMA
2. California Test 371 test results for tensile strength ratio for untreated plant-produced HMA
3. California Test 204 test results for plasticity index if untreated plant-produced HMA test result determined under California Test 371 is below the specified HMA mix design requirements
4. California Test 371 test results for treated plant-produced HMA if untreated plant-produced HMA test result determined under California Test 371 is below the specified HMA mix design requirements
5. AASHTO T 324 (Modified) test results data showing number of passes with rut depth for plant-produced HMA
6. AASHTO T 324 (Modified) test results data showing number of passes at inflection point for plant-produced HMA

39-1.31A(3)(b) Prepaving Conference

With the JMF submittal, submit a list of names participating in the prepaving conference. Identify each participant's name, employer, title, and role in the production and placement of WMA or HMA with WMA technology.

39-1.31A(3)(c) Tests and Samples

The 6th paragraph of section 39-1.03C does not apply.

At production start-up and within ±1,000 tons of the halfway point of production of HMA produced using WMA technology, submit samples split from your HMA production sample for California Test 371 and AASHTO T 324 (Modified) test to the Engineer and METS, Attention: Moisture Test.

With the JMF submittal, at JMF verification, at production start-up, and for each 10,000 tons of HMA produced, submit California Test 371 test results and AASHTO T 324 (Modified) test results for mix design and production to the Engineer and electronically to:

Moisture_Tests@dot.ca.gov

With the JMF submittal, at JMF verification, at production start-up evaluation, and for each 10,000 tons of HMA produced, submit 1 tested sample set from the AASHTO T 324 (Modified) test to the Engineer.

39-1.31A(3)(d) Daily Production Log

Submit the log of production data, daily and upon request.

39-1.31A(4) Quality Control and Assurance

39-1.31A(4)(a) General

Not Used

39-1.31A(4)(b) Technical Representative

A technical representative from the WMA technology supplier must be present during the first 3 days of production and placement of WMA or HMA using WMA technology. The technical representative must advise you, the Engineer, and the HMA producer regarding the HMA mix operation as it relates to the WMA technology.

The technical representative must advise the HMA producer regarding HMA plant and HMA plant process-controller modifications necessary for integrating WMA technology with HMA plant. HMA plant modifications and WMA technology equipment, scales, and meters must comply with the Department's Materials Plant Quality Program (MPQP).

39-1.31A(4)(c) Prepaving Conference

Schedule a prepaving conference with the Engineer at a mutually agreed time and place. Make arrangements for the conference facility. Be prepared to discuss:

1. HMA production and placement
2. Method for incorporating WMA technology and any impacts on HMA production and placement including requirements for compaction and workmanship
3. Contingency plan

The following personnel must attend the prepaving conference:

1. Project Manager
2. Superintendent
3. Technical representative for WMA technology
4. HMA plant manager
5. HMA plant operators
6. HMA paving foreman

39-1.31A(4)(d) Quality Control Testing

In addition to the requirements specified in section 39-2.02B for Standard construction process and section 39-4.02C for QC/QA construction process and for Method construction process, perform sampling and testing at the specified frequency and location for the following additional quality characteristics:

Minimum Quality Control

Quality characteristic	Test method	Minimum sampling and testing frequency	Requirement			Sampling location	Maximum reporting time allowance
			HMA Type				
			A	B	RHMA-G		
Moisture susceptibility (minimum dry strength, psi)	California Test 371	First production day and 1 per every 10,000 tons	120	120	120	Loose mix behind the paver. See California Test 125	15 days
Moisture susceptibility (tensile strength ratio, %)	California Test 371		Report Only	Report Only	Report Only		
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth) PG-58 PG-64 PG-70 PG-76	AASHTO T 324 (Modified)		 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	 15,000 20,000 25,000 --		7 days[a]
Hamburg wheel track (inflection point minimum number of passes) PG-58 PG-64 PG-70 PG-76	AASHTO T 324 (Modified)		 10,000 10,000 12,500 15,000	 10,000 10,000 12,500 15,000	 10,000 12,500 15,000 --		

[a] Submit test data and 1 tested sample set.

39-1.31A(4)(e) Engineer's Acceptance

In addition to the requirements specified in section 39-2.03A for Standard construction process, section 39-3.02A for Method construction process, and section 39-4.04A for QC/QA construction process, the Engineer samples HMA for acceptance testing and tests for the following additional quality characteristic:

HMA Acceptance

Quality characteristic	Test method	Requirement			Sampling location
		HMA Type			
		A	B	RHMA-G	
Moisture susceptibility (minimum dry strength, psi)	California Test 371	120	120	120	Loose mix behind the paver. See California Test 125
Moisture susceptibility (tensile strength ratio, %)	California Test 371	Report Only[a]	Report Only[a]	Report Only[a]	
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth) PG-58 PG-64 PG-70 PG-76	AASHTO T 324 (Modified)	 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	 15,000 20,000 25,000 --	
Hamburg wheel track (inflection point minimum number of passes) PG-58 PG 64 PG-70 PG-76	AASHTO T 324 (Modified)	 10,000 10,000 12,500 15,000	 10,000 10,000 12,500 15,000	 10,000 12,500 15,000 --	

[a]The Department does not use California Test 371 tensile strength ratio test results from production to determine specification compliance.

39-1.31B MATERIALS

39-1.31B(1) General

Not Used

39-1.31B(2) Foaming Bitumen

If water injection is used by the WMA technology, the foamed bitumen must have the following quality characteristics:

Quality Requirements for Foaming Bitumen

Quality characteristic	Test method	Requirement
Expansion ratio (minimum)	LP-12	4
Half-life (seconds minimum)	LP-12	4

For Laboratory Procedure LP-12, go to the METS Web site.

39-1.31B(3) Hot Mix Asphalt

39-1.31B(3)(a) General

Not Used

39-1.31B(3)(b) Mix Design

For WMA additive technology, produce HMA mix samples for your mix design using your methodology for inclusion of WMA admixture in laboratory produced HMA. For WMA water injection foam technology, the use of foamed asphalt for mix design is not required.

HMA mix design must comply with the following quality characteristics:

Hot Mix Asphalt Mix Design Requirements

Quality characteristic	Test method	HMA Type		
		A	B	RHMA
Moisture susceptibility (minimum dry strength, psi)	California Test 371	120	120	120
Moisture susceptibility (tensile strength ratio, %)	California Test 371	70	70	70
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth)	AASHTO T 324 (Modified)			
PG-58		10,000	10,000	15,000
PG 64		15,000	15,000	20,000
PG-70		20,000	20,000	25,000
PG-76		25,000	25,000	--
Hamburg wheel track (inflection point minimum number of passes)	AASHTO T 324 (Modified)			
PG-58		10,000	10,000	10,000
PG 64		10,000	10,000	12,500
PG-70		12,500	12,500	15,000
PG-76		15,000	15,000	--

If the determined test results under California Test 371 or AASHTO T 324 (Modified) for untreated plant produced HMA are less than the minimum requirement for the mix design, determine the plasticity index of the aggregate blend under California Test 204. Choose from the antistrip treatments based on plasticity index as shown in the following table:

Hot Mix Asphalt Antistrip Treatment Options

Quality characteristic	Test method	Treatment requirement
Plasticity index from 4 to 10 [a]	California Test 204	Dry hydrated lime with marination Lime slurry with marination
Plasticity index less than 4		Liquid antistrip Dry hydrated lime without marination Dry hydrated lime with marination Lime slurry with marination

[a] If the plasticity index is greater than 10, do not use that aggregate blend.

Mix design for treated plant-produced HMA must comply with the mix design requirements, except if the tensile strength ratio test result for treated plant produced RHMA-G is less than the mix design requirement for tensile strength ratio, the minimum tensile strength ratio requirement is waived, but you must use any of the following antistrip treatments:

1. HMA aggregate lime treatment – slurry method
2. HMA aggregate lime treatment – dry lime method
3. Liquid antistrip treatment using 0.5 percent liquid antistrip

39-1.31B(3)(c) Job Mix Formula Verification

HMA produced for JMF verification must be produced using the WMA technology shown in the JMF submittal.

Perform the AASHTO T 324 (Modified) test for compliance with the mix design requirements. Submit test data and one tested sample set from the AASHTO T 324 (Modified) test.

The Engineer may verify that the HMA complies with the mix design requirements for AASHTO T 324 (Modified) and California Test 371.

If you request, the Engineer verifies RHMA-G quality requirements within 5 business days of sampling. The 2nd sentence in the 8th paragraph of section 39-1.03E does not apply.

39-1.31B(4) Production

39-1.31B(4)(a) General

For the Standard and QC/QA construction processes, HMA produced using WMA technology must be produced at a temperature between 240 and 325 degrees F.

For the Method construction process, HMA produced using WMA technology must be produced at the temperatures specified in section 39-1.08.

HMA additives used for antistrip treatment and WMA technologies may be either in a liquid or dry state.

The HMA plant must have a sampling device in the feed line connecting the additive storage to the additive metering system. The sampling equipment must comply with California Test 125.

39-1.31B(4)(b) Proportioning Warm Mix Asphalt Technologies

HMA plants using WMA technology must comply with the Department's MPQP.

Proportion all ingredients by weight. The HMA plant process controller (PPC) must be the sole source of ingredient proportioning control and be fully interfaced with all scales and meters used in the production process. The addition of the HMA additive must be controlled by the PPC.

Weighing and metering devices used for the production of additive enhanced HMA must comply with the requirements of the MPQP. If a loss-in-weight meter is used for dry HMA additive, the meter must:

1. Comply with the requirements of the MPQP
2. Have an automatic and integral material delivery control system for the refill cycle

Calibrate the loss-in-weight meter by:

1. Including at least 1 complete system refill cycle during each calibration test run
2. Operating the device in a normal run mode for 10 minutes immediately before starting the calibration process
3. Isolating the scale system within the loss-in-weight feeder from surrounding vibration
4. Checking the scale system within the loss-in-weight feeder for accuracy before and after the calibration process and daily during mix production
5. Using a 15-minute or 250-pound-minimum test run size for a dry ingredient delivery rate of less than 1 ton/hr
6. Complying with the limits of Table B, "Conveyor Scale Testing Extremes," in the MPQP

Produce additive enhanced HMA by using either a continuous mixing or a batch type HMA plant.

Liquid ingredient additive, including a normally dry ingredient made liquid, must be proportioned with a mass flow meter at continuous mixing plants. Use a mass flow meter or a container scale to proportion liquid additives at batch mixing plants.

Continuous mixing plants using HMA additives must comply with the following:

1. Dry ingredient additives for continuous production must be proportioned with a conveyor scale or a loss-in-weight meter.
2. HMA PPC and ingredient measuring systems must be capable of varying all ingredient feed rates proportionate with the dry aggregate delivery at all production rates and rate changes.
3. Liquid HMA additive must enter the production stream with the binder. Dry HMA additive must enter the production stream at or before the mixing area.
4. If dry HMA additives are used at continuous mixing HMA plants, baghouse dust systems must return all captured material to the mix.
5. HMA additive must be proportioned to within ±0.3 percent of the target additive rate.

Batch mixing plants using HMA additives must comply with the following:

1. Metered HMA additive must be placed in an intermediate holding vessel before being added to the stream of asphalt binder as it enters the pugmill.
2. If a container scale is used, weigh additive before combining with asphalt binder. Keep the container scale separate from other ingredient proportioning. The container scale capacity must be no more than twice the volume of the maximum additive batch size. The container scale's graduations must be smaller than the proportioning tolerance or 0.001 times the container scale capacity.
3. Dry HMA additive proportioning devices must be separate from metering devices for the aggregates and asphalt binder. Proportion dry HMA additive directly into the pugmill or place in an intermediate holding vessel to be added to the pugmill at the appropriate time in the batch cycle. Dry ingredients for batch production must be proportioned with a hopper scale.
4. Zero tolerance for the HMA additive batch scale is ±0.5 percent of the target additive weight. The indicated HMA additive batch scale weight may vary from the preselected weight setting by up to ±1.0 percent of the target additive weight.

39-1.31B(4)(c) Production Data Collection

The HMA PPC must produce an electronic log of production data consisting of a series of snapshots captured at a maximum of 1-minute intervals throughout daily production. Each snapshot of production data must be a register of production activity at that time and not a summation of the data over the preceding interval to the previous snapshot. The amount of material represented by each snapshot is the amount produced during the 0.5-minute interval before and the 0.5-minute interval after the capture time. Collect and hold data for the duration of the contract and submit the electronic media, daily and upon request. The snapshot of production data must include the following:

1. Date of production
2. Production location
3. Time of day the data is captured
4. HMA mix type being produced and target binder rate
5. HMA additive type, brand, and target rate
6. Temperature of the binder and HMA mixture
7. For a continuous mix operation, the rate of flow of the dry aggregate calculated from the wet aggregate flow rate as determined by the conveyor scale
8. For a continuous mix plant operation, the rate of flow of the asphalt meter
9. For a continuous mix plant operation, the rate of flow of HMA additive meter
10. For a batch plant operation, actual batch weights of all ingredients
11. Dry aggregate to binder ratio calculated from metered ingredient output
12. Dry aggregate to HMA additive ratio calculated from metered output

Electronic media must be presented in a comma-separated values (CSV) or tab-separated values (TSV) format. Captured data, for the ingredients represented by production snapshot, must have allowances for sufficient fields to satisfy the amount of data required by these specifications and include data titles at least once per report.

39-1.31C CONSTRUCTION

You must request adjustments to the plant asphalt binder set point based on new RAP stockpiles average asphalt binder content. Do not adjust the HMA plant asphalt binder set point unless authorized.

The specified temperatures in section 39-1.11 for transporting, spreading and compacting of HMA apply to HMA produced using WMA technology. For the Method construction process, the specified temperatures in section 39-3.04 for transporting, spreading, and compacting of HMA apply to HMA produced using WMA technology.

39-1.31D PAYMENT

Not Used

Add to section 39-6:

The bid item for place hot mix asphalt (miscellaneous area) is limited to the areas shown and is in addition to the bid items for the materials involved.

^^

40 CONCRETE PAVEMENT

Replace section 40-1.01C(13) with:

40-1.01C(13) Profile Data and Straightedge Measurements

At least 5 business days before start of initial profiling or changing profiler or operator, submit:

1. Inertial profiler (IP) certification issued by the Texas Transportation Institute (TTI). The certification must not be more than 12 months old.
2. Operator certification for the IP issued by TTI. The operator must be certified for each different model of IP device operated. The certification must not be more than 36 months old.
3. List of manufacturer's recommended test procedures for IP calibration and verification.

Within 2 business days after cross correlation testing, submit ProVAL profiler certification analysis report for cross correlation test results performed on test section. ProVAL is FHWA's software. Submit the certification analysis report to the Engineer and to the electronic mailbox address:

smoothness@dot.ca.gov

Within 2 business days after each day of inertial profiling, submit profile data to the Engineer and to the electronic mailbox address:

smoothness@dot.ca.gov

Within 2 business days of performing straightedge testing, submit a report on areas requiring smoothness correction.

Replace section 40-1.01C(14) with:

40-1.01C(14) Coefficient of Thermal Expansion

Fabricate test specimens from a single sample of concrete for coefficient of thermal expansion testing under AASHTO T 336. Submit 4 test specimens for assurance testing. Submit your test data at:

http://169.237.179.13/cte/

Replace "Reserved" in section 40-1.01D(1) with:

Provide a QC manager under section 11.

Replace section 40-1.01D(7)a with:

40-1.01D(7)(a) Coefficient of Thermal Expansion Testing

Perform coefficient of thermal expansion testing under AASHTO T 336 at a frequency of 1 test for each 5,000 cu yd of paving but not less than 1 test for projects with less than 5,000 cu yd of concrete. This test is not used for acceptance.

For field qualification, perform coefficient of thermal expansion testing under AASHTO T 336.

Replace section 40-1.01D(9) including the RSS for section 40-1.01D(9) with:

40-1.01D(9) Pavement Smoothness

40-1.01D(9)(a) General

Notify the Engineer 2 business days before performing smoothness testing including IP calibration and verification testing. The notification must include start time and locations by station.

Before testing the pavement smoothness, remove foreign objects from the surface, and mark the beginning and ending station on the pavement shoulder.

Test pavement smoothness using an IP except use a 12-foot straightedge at the following locations:

1. Traffic lanes less than 1,000 feet in length including ramps, turn lanes, and acceleration and deceleration lanes
2. Areas within 15 feet of manholes
3. Shoulders
4. Weigh-in-motion areas
5. Miscellaneous areas such as medians, gore areas, turnouts, and maintenance pullouts

40-1.01D(9)(b) Straightedge Testing

Identify locations of areas requiring correction by:

1. Location Number
2. District-County-Route
3. Beginning station or post mile to the nearest 0.01 mile
4. For correction areas within a lane:
   4.1. Lane direction as NB, SB, EB, or WB
   4.2. Lane number from left to right in direction of travel
   4.3. Wheel path as "L" for left, "R" for right, or "B" for both
5. For correction areas not within a lane:
   5.1. Identify pavement area (i.e., shoulder, weight station, turnout)
   5.2. Direction and distance from centerline as "L" for left or "R" for right
6. Estimated size of correction area

40-1.01D(9)(c) Inertial Profile Testing

IP equipment must display a current certification decal with expiration date.

Conduct cross correlation IP verification test in the Engineer's presence before performing initial profiling. Verify cross correlation IP verification test at least annually. Conduct 5 repeat runs of the IP on an authorized test section. The test section must be on an existing concrete pavement surface 0.1 mile long. Calculate a cross correlation to determine the repeatability of your device under Section 8.3.1.2 of AASHTO R 56 using ProVAL profiler certification analysis with a 3 feet maximum offset. The cross correlation must be a minimum of 0.92.

Conduct the following IP calibration and verification tests in the Engineer's presence each day before performing inertial profiling:

1. Block test. Verify the height sensor accuracy under AASHTO R 57, section 5.3.2.3.
2. Bounce test. Verify the combined height sensor and accelerometer accuracy under AASHTO R 57, section 5.3.2.3.2.
3. DMI test. Calibrate the accuracy of the testing procedure under AASHTO R 56, section 8.4.
4. Manufacturer's recommended tests.

For IP testing, wheel paths are 3 feet from and parallel to the edge of a lane. Left and right are relative to the direction of travel. The IRI is the pavement smoothness along a wheel path of a given lane. The MRI is the average of the IRI values for the left and right wheel path from the same lane.

Operate the IP according to the manufacturer's recommendations and AASHTO R 57 at 1-inch recording intervals and a minimum 4 inch line laser sensor.

Collect IP data under AASHTO R 56. IP data must include:

1. Raw profile data for each lane
2. ProVAL ride quality analysis report for the international roughness index (IRI) of left and right wheel paths of each lane. Submit in pdf file format.
3. ProVAL ride quality analysis report for the mean roughness index (MRI) of each lane. Submit in pdf file format.
4. ProVAL smoothness assurance analysis report for IRIs of left wheel path. Submit in pdf file format
5. ProVAL smoothness assurance analysis report for IRIs of right wheel path. Submit in pdf file format.
6. GPS data file for each lane in GPS exchange. Submit in GPS eXchange file format.
7. Manufacturer's recommended IP calibration and verification tests results.
8. AASHTO IP calibration and verification test results including bounce, block, and distance measurement instrument (DMI).

Submit the IP raw data in unfiltered electronic pavement profile file (PPF) format. Name the PPF file using the following naming convention:

YYYYMMDD_TTCCCRRR_D_L_W_S_X_PT.PPF

where:
YYYY = year
MM = Month, leading zero
DD = Day of month, leading zero
TT = District, leading zero
CCC = County, 2 or 3 letter abbreviation as shown in section 1-1.08
RRR = Route number, no leading zeros
D = Traffic direction as NB, SB, WB, or EB
L = Lane number from left to right in direction of travel
W = Wheel path as "L" for left, "R" for right, or "B" for both
S = Beginning station to the nearest foot (i.e., 10+20) or beginning post mile to the nearest hundredth (i.e., 25.06) no leading zero
X = Profile operation as "EXIST" for existing pavement, "PAVE" for after paving, or "CORR" for after final surface pavement correction
PT = Pavement type (i.e., "concrete", etc.)

Determine IRIs using the ProVAL ride quality analysis with 250 mm and IRI filters. While collecting the profile data to determine IRI, record the following locations in the raw profile data:

1. Begin and end of all bridge approach slabs
2. Begin and end of all bridges
3. Begin and end of all culverts visible on the roadway surface

For each 0.1 mile section, your IRI values must be within 10 percent of the Department's IRI values. The Engineer may order you to recalibrate your IP equipment and reprofile. If your results are inaccurate due to operator error, the Engineer may disqualify your IP operator.

Determine the MRI for 0.1-mile fixed sections. A partial section less than 0.1 mile that is the result of an interruption to continuous pavement surface must comply with the MRI specifications for a full section. Adjust the MRI for a partial section to reflect a full section based on the proportion of a section paved.

Determine the areas of localized roughness. Use the ProVAL smoothness assurance with a continuous IRI for each wheel path, 25-foot interval, and 250 mm and IRI filters.

Replace the 2nd paragraph of the RSS for section 40-1.01D(13)(a) with:

Pavement smoothness may be accepted based on your testing in the absence of the Department's testing.

Replace the paragraphs in section 40-1.01D(13)(d) including the RSS for section 40-1.01D(13)(d) with:

Where testing with an IP is required, the pavement surface must have:

1. No areas of localized roughness with an IRI greater than 120 in/mi
2. MRI of 60 in/mi or less within a 0.1 mile section

Where testing with a straightedge is required, the pavement surface must not vary from the lower edge of the straightedge by more than:

1. 0.01 foot when the straightedge is laid parallel with the centerline
2. 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
3. 0.02 foot when the straightedge is laid within 24 feet of a pavement conform

Add after the 5th paragraph of the RSS for section 40-1.02E:

The 2nd, 3rd, and 4th paragraphs of section 40-1.02E do not apply. Tie bars must be stainless-steel bars. Stainless steel bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.

Add after the 3rd paragraph of the RSS for section 40-1.02F:

The 2nd sentence of the 1st paragraph and the 2nd 3rd paragraphs in section 40-1.02F do not apply. Dowel bars must be stainless-steel bars. Stainless steel bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.

Replace "Reserved" in section 40-1.02I(1) with:

Liquid joint sealant for transverse, longitudinal contraction and isolation joints must be silicone.

Longitudinal contraction joints must be Type B or R. Transverse contraction joints must be Type B or R.

Add to section 40-1.03E:

40-1.03E(1)(a) Concrete Pavement And Pavement Preparation For Weigh-In-Motion System

40-1.03E(1)(a)(i) General

In new concrete pavement, transverse joints adjacent to a weigh-in-motion (WIM) system must meet the following criteria:

1. Transverse joints must be clear of the WIM scale frame location.
2. Construct transverse joints where directed by the Engineer.

    2.1. Sawcut the transverse joints adjacent to the WIM scale frame location prior to opening the lanes to public traffic.
    2.2.. The minimum sawcut depth for the transverse joints adjacent to the WIM scale frame location is one half the pavement thickness.
    2.3.. Pavement panels near the WIM scale panels must have transverse joints perpendicular to the traveled way.

40-1.03E(1)(a)(ii) Submittals

Three weeks before placing new concrete pavement, provide notification to the Engineer to request confirmation from the Department WIM office for transverse joint layouts.

Replace the list for the 7th paragraph of section 40-1.03G with:

1. Pavement surface must not vary from the lower edge of a 12-ft straightedge by more than:
    1.1. 0.01 foot when the straightedge is laid parallel with the centerline
    1.2. 0.02 foot when the straightedge is laid perpendicular to the centerline and extends from edge to edge of a traffic lane
    1.3. 0.02 foot when the straightedge is laid within 24 feet of a pavement conform
2. Dowel bars do not comply with specified placement tolerances
3. Concrete pavement thickness deficiency is greater than 0.05 foot
4. Final finishing does not comply with the specifications except coefficient of friction

Add after the 9th paragraph of section 40-1.03G:

Retest the test strip smoothness under section 40-1.01D(9).

Delete the 1st paragraph of section 40-1.03H(2).

Replace "Reserved" in section 40-1.03L(1) of the RSS for section 40-1.03L with:

Construct edge treatments as shown. Regrade when required for the preparation of safety edge areas.

Sections 40-1.03L(2) and 40-1.03L(3) do not apply to safety edges.

For safety edges placed after the concrete pavement is complete, concrete may comply with the requirements for minor concrete.

For safety edges placed after the concrete pavement is complete, install connecting bar reinforcement under section 52.

Saw cutting or grinding may be used to construct safety edges.

For safety edges, the angle of the slope must not deviate by more than ± 5 degrees from the angle shown. Measure the angle from the plane of the adjacent finished pavement surface.

Replace the 2nd and 3rd paragraphs of section 40-1.03Q(5) with:

Do not start corrective work until:

1. Pavement has cured 10 days
2. Pavement has at least a 550 psi modulus of rupture
3. Your corrective method is authorized

Correct the entire lane width and begin and end grinding at lines perpendicular to the roadway centerline. The corrected area must have a uniform texture and appearance.

Add after the 4th paragraph of section 40-1.03Q(5):

If corrections are made within areas where testing with an IP is required, retest the entire lane length with an IP under section 40-1.01D(9).

If corrections are made within areas where testing with a 12-foot straightedge is required, retest the corrected area with a straightedge under section 40-1.01D(9).

Replace "Reserved" in section 40-4 with:

40-4 JOINTED PLAIN CONCRETE PAVEMENT WITH RAPID STRENGTH CONCRETE

40-4.01 GENERAL

40-4.01A Summary

Section 40-4 includes specifications for constructing JPCP with RSC (JPCP, RSC).

The specifications in section 40 for JPCP apply to JPCP, RSC.

40-4.01B Definitions

early age: The age less than 10 times the concrete final set time.

cold joint: A visible lineation which forms when placement of concrete is delayed, the concrete in place hardens prior to the next placement of concrete against it.

concrete raveling: The progressive disintegration of a concrete layer from the surface downward as a result of the dislodgement of aggregate particles.

final set time: Time a specific penetration resistance of 4,000 psi is achieved, determined under ASTM C 403.

full depth crack: Concrete crack that runs from one edge of the slab to the opposite or adjacent side of the slab.

opening age: Age at which the concrete achieves the specified strength for opening to traffic, including construction traffic.

40-4.01C Submittals

40-4.01C(1) General

Sections 40-1.01C(11) and 40-1.01C(12) do not apply to JPCP, RSC.

40-4.01C(2) Early Age Crack Mitigation System

At least 24 hours before each paving shift, submit the following information as an informational submittal:

1. Early age stress and strength predictions
2. Scheduled sawing and curing activities
3. Contingency plan if cracking occurs

40-4.01C(3) Rapid Strength Concrete

At least 45 days before the intended use, submit a sample of cement from each proposed lot and samples of proposed admixtures in the quantities ordered by the Engineer.

During JPCP, RSC pavement operations, submit uniformity reports for hydraulic cement at least once every 30 days to METS, Attention: Cement Laboratory. Uniformity reports must comply with ASTM C 917, except testing age and water content may be modified to suit the particular material.

At least 10 days before use in a trial slab, submit a mix design that includes:

1. Opening age
2. Proposed aggregate gradation
3. Proportions of hydraulic cement and aggregate
4. Types and amounts of chemical admixtures
5. Maximum time allowed between batching and placing
6. Range of ambient temperatures over which the mix design is effective
7. Final set time
8. Any special instructions or conditions such as water temperature requirements

Submit more than 1 mix design to plan for ambient temperature variations anticipated during RSC placement. Each mix design must have a maximum ambient temperature range of 18 degrees F.

Submit modulus of rupture development data for each mix design. You may use modulus of rupture development data from laboratory-prepared samples. The modulus of rupture development data must include tests at 1 hour before opening age, opening age, 1 hour after opening age, 24 hours, 3 days, 7 days and 28 days.

40-4.01D Quality Control and Assurance

40-4.01D(1) General

Sections 40-1.01D(4) ,40-1.01D(5), 40-1.01D(6), 40-1.01D(7), and 40-1.01D(8), do not apply to JPCP, RSC.

40-4.01D(2) Quality Control Plan

The QC plan must include:

1. Names and qualifications of the lead QC manager and assistant QC managers
2. Contingency plan for correcting problems in production, transportation, or placement,
3. Provisions for determining if JPCP, RSC placement must be suspended
4. Outline procedure for the production, transportation, and placement of JPCP, RSC
5. Outline procedure for sampling and testing to be performed during and after JPCP, RSC construction
6. Forms to report concrete inspection, sampling, and testing
7. Location of your quality control testing laboratory and testing equipment during and after paving operations
8. List of the testing equipment to be used, including the date of last calibration
9. Names and certifications of quality control personnel including those performing sampling and testing
10. Outline procedure for placing and testing trial slabs, including:
    - 10.1. Locations and times
    - 10.2. Production procedures
    - 10.3. Placement and finishing methods
    - 10.4. Sampling methods, sample curing, and sample transportation
    - 10.5. Testing and test result reporting
11. Procedure for identifying transverse contraction joint locations relative to the dowel bars longitudinal center and a procedure for consolidating concrete around the dowel bars

The QC manager responsible for the production period involved must review and sign the sampling, inspection, and test reports before submittal. At least 1 QC manager must be present for:

1. Each stage of mix design
2. Trial slab construction
3. Production and construction of JPCP, RSC
4. Meetings with the Engineer relating to production, placement, or testing

A QC manager must not be a member of this project's production or paving crews, an inspector, or a tester. A QC manager must have no duties during the production and placement of JPCP, RSC except those specified.

40-4.01D(3) Trial Slabs

Before starting JPCP, RSC work, complete 1 trial slab for each mix design. Demonstrate that you are capable of constructing JPCP, RSC in compliance with the specifications within the specified time periods including delivery, placement, finishing, and curing times, and under similar atmospheric and temperature conditions expected during replacement operations.

Trial slabs must be 10 by 20 feet. The trial slab thickness must be at least 10 inches. Place trial slabs near the job site at a mutually-agreed location that is neither on the roadway nor within the project limits.

During trial slab construction, sample and split the aggregate for grading, cleanness value, and sand equivalent testing.

Within 20 minutes after RSC delivery for trial slabs, fabricate test beams under California Test 524. Use test beams to determine opening age and 3-day modulus of rupture values.

Cure beams fabricated for early age testing such that the monitored temperatures in the beams and the slab are always within 5 degrees F. Monitor and record the internal temperatures of trial slabs and early age beams at intervals of at least 5 minutes. Install thermocouples or thermistors connected to strip-chart recorders or digital data loggers to monitor the temperatures. Temperature recording devices must be accurate to within ±2 degrees F. Measure internal temperatures at 1 inch from the top, 1 inch from the bottom, and no closer than 3 inches from any edge until early age testing is completed.

Cure beams fabricated for 3-day testing under California Test 524 except place them into sand at a time that is from 5 to 10 times the final set time, or 24 hours, whichever is earlier.

Trial slabs must have opening age modulus of rupture of not less than 400 psi and a 3-day modulus of rupture of not less than 600 psi. If the opening age is 3 days or more, the minimum modulus of rupture strength for opening age must be 600 PSI.

Dispose of trial slabs and test specimens for trial slabs.

40-4.01D(4) Early Age Crack Mitigation System

Develop and implement a system for predicting stresses and strength during the initial 72 hours after paving. The system must include:

1. Subscription to a weather service to obtain forecasts for wind speed, ambient temperatures, humidity, and cloud cover
2. Portable weather station with an anemometer, temperature and humidity sensors, located at the paving site
3. Early age concrete pavement stress and strength prediction computer program
4. Analyzing, monitoring, updating, and reporting the system's predictions

40-4.01D(5) Quality Control Testing

40-4.01D(5)(a) General

Provide a testing laboratory to perform quality control tests. Maintain sampling and testing equipment in proper working condition. Perform sampling under California Test 125.

Determine the modulus of rupture at opening age under California Test 524, except beam specimens may be fabricated using an internal vibrator under ASTM C 31. Test 3 beam specimens in the presence of the Engineer, and average the results. No single test represents more than that day's production or 130 cubic yards, whichever is less. RSC pavement must develop a minimum modulus of rupture of 400 psi at opening age. RSC pavement must develop a minimum modulus of rupture of 600 psi at 3 days after placement. If the opening age is 3 days or more, the minimum modulus of rupture strength for opening age must be 600 PSI.

Determine the modulus of rupture at other ages using beams cured and tested under California Test 524 except place them in sand from 5 to 10 times the final set time or 24 hours, whichever is earlier.

40-4.01D(5)(b) Rapid Strength Concrete

Section 40-1.01D(7) does not apply to JPCP, RSC.

Perform quality control sampling, testing, and inspection throughout JPCP, RSC production and placement. Before any sampling and testing, give the Engineer at least 2 business days notice. Give the Engineer unrestricted access to your quality control inspectors, samplers, testers, and laboratories. Submit test results within 15 minutes of test completion. Record inspection, sampling, and testing on the forms accepted with the QC plan and submit them within 48 hours of completion of each paving shift and within 24 hours of the 3-day modulus of rupture tests.

Your quality control must include testing RSC for the properties at the frequencies shown in the following table:

RSC Minimum Quality Control

Property	Test Method	Minimum Testing Frequency[a]
Cleanness value	California Test 227	650 cu yd or 1 per shift
Sand equivalent	California Test 217	650 cu yd or 1 per shift
Aggregate gradation	California Test 202	650 cu yd or 1 per shift
Air content[b]	California Test 504	130 cu yd or 2 per shift
Yield	California Test 518	2 per shift
Slump or penetration	ASTM C143 or California Test 533	1 per 2 hours of paving
Unit weight	California Test 518	650 cu yd or 2 per shift
Moisture [c]	California Test 223 or 226	1 per shift

[a]Test at the most frequent interval.
[b]Testing only required in freeze-thaw areas.
[c]Check calibration by comparing moisture meter reading with California Test 223 or 226 test result.

For air content test, record the individual measurement and superimpose the action and suspension limits shown in the following table:

Air Content Action and Suspension Limits

	Individual measurements	
Control parameter	Action limit	Suspension limit
Air content, California Test 504	±1.0 %	±1.5 %

The action limit is the limiting value at which corrective actions must be made while production may continue. The suspension limit is the limiting value at which production must be suspended while corrections are made.

During placement of JPCP, RSC, fabricate beams and test for the modulus of rupture within the first 30 cu yd, at least once every 130 cu yd, and within the final truckload.

If requested, submit split samples and fabricate test beams for the Department's testing.

For determining the early age modulus of rupture, cure beams under the same conditions as the pavement until 1 hour before testing. Cure beams fabricated for the 3-day test under California Test 524.

Testing laboratories and testing equipment must comply with the Department's Independent Assurance Program.

If JPCP, RSC does not conform to the mix design requirements or the specifications, provide extra samples and testing. Sampling, fabricating, transporting, and testing extra samples is change order work. If the extra samples do not comply with the specifications, these costs are at your expense. If the extra samples comply with the specifications, the Department pays you for these costs.

40-4.01D(6) Acceptance Criteria

40-4.01D(6)(a) General

In section 40-1.01D13(a), the following concrete pavement acceptance testing do not apply to JPCP, RSC:

1. 28-day modulus of rupture, for PCC
2. Air content (freeze thaw)

40-4.01D(6)(b) Modulus of Rupture

RSC pavement is accepted based on the Department's testing for modulus of rupture strength at 3 days. The Engineer may accept RSC pavement that does not attain the specified modulus of rupture under section 40-4.04. The Department determines the modulus of rupture by testing 3 beams specimen and average the result. The testing is for each day of production or 130 cubic yards, whichever is less. The Engineer uses the modulus of rupture test results for accepting or rejecting the replacement pavement and pay factor adjustment for low modulus of rupture.

40-4.01D(6)(c) Concrete Pavement Smoothness

The concrete surface shall be free from concrete raveling. If the total surface area of concrete raveling is more than 5% of the concrete slab or greater than 4 square feet at any one raveling area, remove and replace the concrete.

40-4.01D(6)(d) Repair and Replacement of New Slabs

Comply with section 40-6.

If within 64 days of RSC placement there is one or more full-depth cracks, the Engineer rejects the area of RSC. Remove the rejected RSC slab at your expense and replace it.

40-4.02 MATERIALS

40-4.02A General

Sections 40-1.02B(2), 40-1.02B(2)(a), and 40-1.02B(2)(b) do not apply.

40-4.02B Rapid Strength Concrete

Choose the combined aggregate grading for RSC from either the 1-1/2 inch maximum or the 1-inch maximum combined grading in section 90-1.02C(4)(d).

Aggregate for RSC must be either:

1. Innocuous aggregates.
2. When tested under ASTM C 1567 using each proposed aggregate and cementitious materials at the proposed ratio, the expansion is less than 0.10 percent. Include test data with each mix design. Test data must be less than 3 years old on the date of the date of contract award. The test data must be for the same concrete mix and must use the same materials and material sources to be used on the Contract.

RSC must develop the specified strength at opening age and 3-day modulus of rupture strengths.

40-4.02C Temporary Roadway Pavement Structure

Temporary roadway pavement structure consists of aggregate base and HMA. RSC not conforming to the specifications may serve as temporary roadway if:

1. The modulus of rupture is at least 200 psi
2. RSC thickness is greater than or equal to the existing concrete pavement surface layer
3. RSC is replaced during the next paving shift.

Aggregate base for temporary roadway pavement structure must be produced from any combination of broken stone, crushed gravel, natural rough-surfaced gravel, reclaimed concrete, and sand that complies with the 3/4-inch maximum grading specified in section 26-1.02B.

For HMA:
1. Choose the 3/8 inch or 1/2 inch HMA Type A or Type B aggregate gradation under section 39-1.02E.
2. Minimum asphalt binder content must be 6.8 percent for 3/8-inch aggregate gradation and 6.0 percent for 1/2 inch aggregate gradation.
3. Choose asphalt binder Grade PG 64-10, PG 64-16, or PG 70-10

40-4.03 CONSTRUCTION

40-4.03A General

Sections 40-1.03N and 40-1.03O do not apply to JPCP, RSC.

Do not place JPCP, RSC if within 72 hours of final finishing, the temperature is forecasted to be less than 40 degrees F. Use the forecast from the National Weather Service.

Do not apply:

1. Revised Section 40-1.03L(3) Final Finishing paragraph 6 and replace with :

   Initial and final texturing must produce a coefficient of friction of at least 0.30 when tested under California Test 342. Notify the Engineer when the concrete pavement is scheduled to be opened to traffic. Allow at least 25 days for the Department to test for coefficient of friction.

2. Section 40-1-03P Par 4, and 5
3. Section 40-1.03Q(5) Par 2

40-4.03B Test Strip

Replace Section 40-1.03G paragraph 2 with the following:

The first paving activity must be to construct a test strip:

1. Equivalent in length to one shift paving operation with RSC except not to be less than 400 feet or exceed 1000 feet long
2. Same width as the planned paving
3. With the same equipment used for the planned paving

Demonstrate to the Engineer that RSC can be placed and achieve strength by the opening age.

Section 40-1.03G last paragraph does not apply.

40-4.03C Placing Concrete

Sections 40-1.03H(1), paragraph 2 does not apply to JPCP, RSC.

Place consecutive concrete loads without interruption. No cold joints are allowed.

After mixing and placing JPCP, RSC, do not add water to the surface to facilitate final finishing. Use surface finishing additive as recommended by the manufacturer of the cement after their use is approved by the Department.

40-4.03D Joints

Before placing RSC against existing concrete, place 1/4-inch thick commercial quality polyethylene flexible foam expansion joint filler across the original transverse joint faces and extend the excavation's full depth. Place the top of the joint filler flush with the top of the pavement. Secure joint filler to the joint face of the existing pavement to prevent the joint filler from moving during the placement of RSC.

Where the existing transverse joint spacing in an adjacent lane exceeds 15 feet, construct an additional transverse contraction joint midway between the existing joints.

JPCP, RSC curing must comply with the RSC manufacturer's written recommendations.

In addition to the specifications in section 40-1.03Q(4), after removing new pavement, clean the faces of joints and underlying base from loose material and contaminants. Coat the faces with curing compound under section 28-2.03F.

40-4.03E Temporary Roadway Pavement Structure

Place HMA and aggregate base where existing pavement is replaced for construction of a temporary roadway pavement structure. The quantity must be equal to the quantity of pavement removed during the work shift. If you place temporary roadway pavement structure, it must be maintained and later removed as the 1st order of work when replace concrete pavement activities resume. The temporary roadway pavement structure must consist of HMA 3-1/2 inches thick over aggregate base. Concrete not conforming to the specifications may be used for temporary roadway pavement structure if authorized.

Spread and compact aggregate base and HMA by methods that produce a well-compacted, uniform base, with a surface of uniform smoothness, texture and density. Surfaces must be free from pockets of coarse or fine material. You may spread aggregate base and HMA each in 1 layer. The finished surface of HMA must not vary more than 0.05 foot from the lower edge of a 12-foot long straightedge placed parallel with the centerline and must match the elevation of existing concrete pavement along the joints between the existing pavement and temporary surfacing.

After removing temporary roadway pavement structure, you may stockpile removed aggregate base at the job site and reuse it for temporary roadway pavement structures. If no longer required, dispose of standby material or stockpiled material for temporary roadway pavement structures.

40-4.04 PAYMENT

For JPCP, RSC with an opening age modulus of rupture of at least 400 psi and a 3-day modulus of rupture greater than or equal to 500 psi but less than 550 psi, the payment deduction is 10 percent.

For JPCP, RSC with an opening age modulus of rupture of at least 400 psi and a 3-day modulus of rupture greater than or equal to 550 psi but less than 600 psi, the payment deduction is 5 percent.

Replace "Reserved" in section 40-7 of the RSS for section 40 with:

40-7 PRECAST PRESTRESSED CONCRETE PAVEMENT

40-7.01 GENERAL

40-7.01A Summary

Section 40-7 includes specifications for furnishing and installing precast prestressed concrete pavement (PPCP). Furnishing includes pretensioning individual pavement panels before casting. Installing includes post-tensioning precast panels in place.

Before submitting shop drawings, field verify the profile and grade information described.

For horizontal curves and transition to horizontal curves, PPCP should match the superelevation and superelevation transition of the roadway. If non-planer panels are needed, you may need to pay a royalty for existing patents.

Use dowel bars at connections between PPCP and the existing concrete. Comply with section 41-11 “Dowel Bar Slots” of these special provisions.

40-7.01B Definitions

system: consists of features that are part of design, construction, and performance of the precast pavement product. These features are included, but are not limited to size and thickness of panels and slabs, joints, elements cast in the panels, load transfer method, techniques for providing grade control for the panels, etc.

40-7.01CSubmittals

Section 40-1.01C does not apply to PPCP.

Section 50-1.01C(3) does not apply to PPCP.

Submit PPCP shop drawings to the Engineer and to Office of Concrete Pavement and Pavement Foundation, MS # 5, 5900 Folsom Boulevard, Sacramento, CA 95819. Submit 4 sets to the Engineer and 1 set to the Office of Concrete Pavement and Pavement Foundation. Allow 15 business days for review.

Shop drawings must include:

1. Details for furnishing PPCP panels including:
   - 1.1. The QCP under section 11-2
   - 1.2. Panel layout and coordinating panel identification system
   - 1.3. Your survey notes for field verification of the existing profile and grade information described
   - 1.4. Your adjusted panel dimensions including calculations for:
     - 1.4.1 Existing pavement profile with any superelevation or transition
     - 1.4.2 Allowable fabrication tolerances
     - 1.4.3. Allowable installation tolerances
   - 1.5. Method for casting connection elements within the specified alignment for final placement
   - 1.6. Base grout vent locations on the details shown for joint panels and central stressing panels and at the mid-point of ducts for base panels.
   - 1.7. Finishing methods and procedures
   - 1.8. Methods and procedures for handling and transport
2. Details, methods and procedures for installing PPCP panels including:
   - 2.1. Methods and procedures for handling panels
   - 2.2. Methods and procedures for supporting and adjusting grade of the PPCP during installation
   - 2.3. Methods and procedures for installing joint filler, joints, and joint seals
   - 2.4. Details and methods for connecting to the existing pavement
3. Detail method for repairing damage during removal from the forms or transport and installation

Submit separate prestressing shop drawings for (1) prestressing at the casting yard and (2) post-tensioning during installation. The shop drawings must comply with Section 50-1.01C(3), “Shop Drawings”, of the Standard Specifications except (1) the 6th and 8th paragraphs do not apply, and (2) do not send it to the OSD. Submit 1 set of shop drawings to the Office of Concrete Pavement and Pavement Foundation.

40-7.01D Quality Control and Assurance

40-7.01D(1) General

Except for Section 40-1.01D(2), Section 40-1.01D does not apply.

Test the coefficient of thermal expansion for each mix design.

Hold the prepaving conference after submitting the shop drawings, and 10 business days before beginning installation activities. Discuss methods of performing the installation work.

At the minimum, the meeting must be attended by your:

1. Project superintendent
2. Quality control manager
3. Installation construction foreman
4. Subcontractor's workers including:
   - 4.1. Fabricator’s project manager
   - 4.2. Personnel responsible for saw cutting, epoxy application, post-tensioning, fill access pockets, duct grouting, underslab grouting and joint sealing

40-7.01D(2) Quality Control Testing

Construct pavement test strips and obtain authorization of your test strips before starting other paving work. Test strips must comply with the authorized shop drawings and be:

1. At least 300 feet long and include at least 2 slabs
2. Same width as shown on the authorized shop drawings
3. Same cross-section dimensions as for the highest rate of superelevation as shown on the authorized shop drawings

Notify the Engineer at least 25 working days before you start test strip installation.

Allow 3 business days for test strip review.

Construct additional test strips if you change:

1. Methods and equipment including:
   1.1. Fabrication plants
   1.2. Panel lifting, shipment, and delivery methods
   1.3. Post-tensioning devices
   1.4. Grouting equipment
   1.5. Connections to the existing pavement
2. Concrete mix for access pockets
3. Grout mix for under the slab

If you have successfully installed PPCP on a previous Department project and used the same fabrication plant, installation equipment and procedures, and personnel, you may request authorization to start precasting without a test strip. Your request must include supporting documentation from the previous Department project.

40-7.01D(3) Pavement Acceptance

40-7.01D(3)(a) General

Construct PPCP panels to the dimensions shown on the authorized shop drawings. PPCP panels are rejected if the fabricated dimensions are not within the tolerances shown in the following table:

PPCP Panel Fabrication

Dimension	Tolerances
Length (longer dimension)	+/- 1/4 inch
Width (shorter dimension)	+/- 1/8 inch
Nominal thickness	+/- 1/16 inch
Edge alignment straightness measured from a horizontal plane	+/- 1/8 inch
Skew at the ends	+/- 1/8 inch
Batter	+/- 1/16 inch
Position of pre-tensioning strands	+/- 1/8 inch, vertical[a]
	+/- 1/8 inch, horizontal
Position of post-tensioning ducts at transverse joints	+/- 1/8 inch, vertical[a]
	+/- 1/8 inch, horizontal
Straightness of post-tensioning ducts along the full length of duct	+/- 1/8 inch, vertical[a]
	+/- 1/4 inch, horizontal
Diagonal difference of the corner to corner measurement	+/- 1/8 inch
Position of lifting anchors	+/- 3 inches

[a]Measured from the bottom of the panel

The profile and grade of the finished PPCP must match the existing pavement including any superelevation and superelevation transition. PPCP panels are rejected if the installed alignments are not within the tolerances shown in the following table:

PPCP Panel Installation

Alignment	Tolerances
Vertical at transverse joints	+/- 1/4 inch
Vertical at longitudinal joints	+/- 1/4 inch
Horizontal at transverse joints	+/- 1/8 inch
Horizontal at longitudinal joints	+/- 1/4 inch

PPCP panels are rejected if:

1. There are voids more the 1/4 inch between base and bottom of panel.
2. Surface varies more than 0.02 foot from a 12-foot straightedge's lower edge
3. Wheel path's individual high points are greater than 0.025 foot in 25 feet
4. Final finishing does not comply with the specifications except coefficient of friction

40-7.01D(3)(b) Test Strips

If the test strip complies with the acceptance criteria except for the coefficient of friction, you may grind the test strip under section 42. If the test strip complies with the acceptance criteria after grinding, you may request to leave the test strip in place.

If the test strip does not comply with the panel alignment criteria, the test strip is rejected. Submit revised shop drawings that include your proposed changes to correct the alignment. After the revised submittals are authorized, install a new test strip. Repeat this process until the test strip complies with the acceptance criteria.

Remove and dispose of rejected test strips.

40-7.02 MATERIALS

40-7.02A General

Bond breaker must be white polyethylene sheeting and at least 6-mils thick. Sheeting must comply with ASTM C 171.

Epoxy for transverse joints must comply with Section 95, “Epoxy,” of the Standard Specifications.

Grout for post-tensioned prestressing steel in ducts must comply with Section 50-1.09, “Bonding and Grouting” of the Standard Specifications.

Grout for underslab grouting must comply with Section 41-2.

Polyester concrete must comply with section 41-1.

Tack coat must comply with section 39.

40-7.02B Prestressing

Prestressing must comply with section 50-1.02 except vents must be placed as specified on plans.

Transverse pretensioning strand must be 0.5 or 0.6 inch diameter, conforming to ASTM Designation: A 416, Grade 270 (low relaxation).

Longitudinal post-tensioning strand must be 0.6 inch diameter conforming to the requirements of ASTM Designation: A 416, Grade 270 (low relaxation).

40-7.02C Joint Seal

Joint seal for expansion joints must be Type B preformed elastomeric joint seal as specified in Section 51, "Concrete Structures," of the Standard Specifications and must accommodate a total movement of 1 inch.

Joint seal for isolation joint between PPCP and existing concrete pavement must be silicone.

40-7.03 CONSTRUCTION

40-7.03A General

Prestressing must comply with section 50-1.03. The specifications for a "member" applies to a PPCP panel.

Where existing pavement is replaced with PPCP, replace only the portion of pavement where the work will be completed during the same lane closure. If installation of the PPCP is not completed during the same lane closure, you must comply with the specifications for temporary roadway pavement structure under section 41-9.

40-7.03B Furnishing PPCP

If the roadway alignment is on a curve with a radius of under 2, 500 feet, place the reinforcement along a single plane. If the curve does not allow the spacing shown between transverse bar reinforcement and prestress, space them a distance that is between one half the specified spacing and the specified spacing. Before casting, grease the section of dowels extending into the expansion sleeve.

Lifting devises must be recessed at least 1/2 inch below the panel surface and a distance of at least 0.2L from any panel edge.

After casting and before curing, comply with section 40-1.03M.

Section 40-1.03N does not apply. Cure PPCP under section 90-4.

Section 40-1.03O does not apply.

PPCP must have a minimum compressive strength of 4,000 psi prior to the time of releasing the pretensioning strands. Before shipping, PPCP must have a minimum compressive strength of 6,000 psi and must have cured for at least 14 days.

40-7.03C Installing PPCP

40-7.03C(1) General

Before installing PPCP, clean and dry the surface of the base and place the bond breaker on it. The bond breaker must be free of wrinkles and overlapped at least 6 inches in the same direction as the panel installation.

Before placing the panels, seal stressing ducts at the transverse joints by either:

1. Placing a compressible foam or neoprene gasket around each duct opening. Do not cover the duct.
2. Placing a sleeve that extends from the duct in one panel to the duct in the next panel.

Sealing the stressing duct must not inhibit insertion of prestressing strand nor grouting.

Seal the transverse joints between panels by either applying epoxy before placement or injecting epoxy after final post-tensioning and grouting.

When applying epoxy before placement, use slow-setting epoxy such that you complete temporary post-tensioning before the epoxy sets. Apply the epoxy to the entire surface of the keyed joints except do not apply within 1/2 inch of a duct opening.

If a PPCP panel is adjacent to HMA, apply tack coat to HMA joint surfaces.

40-7.03C(2) Post-tensioning

After placing 3 adjacent panels, check the PPCP profile and grade and make adjustments, then use temporary post-tensioning to close the transverse joints.

Protect the keyways and temporarily post-tension the panels together until the transverse joints close. The maximum jacking force must not exceed 0.75 F_{pu}. Use elongated stressing pockets to accommodate the prestresssing ram. Strand for temporary tensioning must be 7-wire and either 0.5-inch or 0.6-inch diameter.

Remove the temporary strand before installing the strand for final post-tensioning.

Complete final post-tensioning within 3 days of placing PPCP panels when the panels are opened to traffic prior to post-tensioning.

40-7.03C(3) Grouting

After final post-tensioning and before grouting, fill access pockets with polyester concrete. Consolidate the polyester concrete in place and finish the surface to match the pavement surface. If cracks appear, replace the concrete. Use accelerated strength concrete if the pavement is to be opened to traffic within 3 hours of filling.

If access pockets are unable to be filled prior to opening to traffic, close the pockets with temporary covers to withstand traffic loading. Fasten the temporary covers to the panels so they are not disturbed or dislodged by traffic and are flush with the surface of the pavement. Do not use other filler materials before final filling. Clean access pockets before filling.

Grout the stressing ducts as soon as possible and must be completed within 3 days of final post-tensioning.

Complete underslab grouting within 3 days of filling access pockets. Grouting must comply with the specifications in section 41-2, except do not drill holes. Underslab grouting must occur prior to opening to traffic, if there are voids of 1/2 inch or greater beneath panels during placement.

40-7.03C(4) Joints

Seal joints for expansion joints, isolation joints, and joints between PPCP and existing concrete pavement. Comply with section 41-2.

Follow the manufacturer's specifications for reservoir dimensions and installation width of the joint seal. Adjust the width of the expansion joint on-site based upon the approximate ambient temperature at panel installation according to the following table:

Ambient Temperature (Ta*)	<200 foot Slab Length	>200 foot Slab Length
Ta < 60°F	1 inch	1-1/4 inch
60°F < Ta < 105°F	1/2 inch	3/4 inch
Ta > 105°F	1/4 inch	1/2 inch
* Do not install panels when Ta > 120°F		

40-7.03D Panel Repair

Repair panels damaged during removal from forms and handling in compliance with section 41-4, except polyester concrete must be used. Repairs are required when any surface of the panel or the keyed panel edges are damaged and will affect ride quality, assembly of the panels, or long-term performance of the pavement. Repairs to keyways and adjoining panel edges must not protrude past the edge of the keyway and panel.

Treat the cracks that do not extend to the full depth of a panel with a high molecular weight methacrylate resin in compliance with section 41-3 "Crack Treatment".

40-7.04 PAYMENT

Furnishing and installing PPCP is measured based on the dimensions shown.

If the Engineer accepts a test strip for use as roadway, the test strip is paid for as PPCP.

Joint sealing expansion joints is paid as part of installing PPCP.

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41 CONCRETE PAVEMENT REPAIR

Add to section 41-1.01:

Dowel bars must comply with section 40-1.

Replace "Reserved" in section 41-9.01C(4) with:

At least 20 days before placing trial slabs, submit a written QC plan. The QC plan must detail the methods used to ensure the quality of the work. You or the Engineer may request a meeting to discuss the QC plan. The meeting must include you, the QC Managers, and the Engineer. Allow 15 days for the Department's review.

Replace "Reserved" in section 41-9.01D(3) with:

The QC Plan describes the procedures you will use to control the production process including:

1. Determining if changes to the production process are needed
2. Procedures for proposing changes
3. Procedures for implementing changes

Designate a lead QC manager to administer the QC plan and assistant QC managers. The lead QC manager must hold current American Concrete Institute (ACI) certification as a "Concrete Field Testing Technician-Grade I" and a "Concrete Laboratory Testing Technician-Grade II." Assistant QC managers must hold current ACI certification as a "Concrete Field Testing Technician-Grade I" and either a "Concrete Laboratory Testing Technician-Grade I" or a "Concrete Laboratory Testing Technician-Grade II." The Department qualifies the QC samplers and testers through the Independent Assurance Program (IAP) for the sampling and testing they perform.

The QC manager responsible for the production period involved must review and sign the sampling, inspection, and test reports before submittal. At least 1 QC manager must be present for:

1. Each stage of mix design
2. Trial slab construction
3. Production and construction of RSC
4. Meetings with the Engineer relating to production, placement, or testing

A QC manager must not be a member of this project's production or paving crews, an inspector, or a tester. A QC manager must have no duties during the production and placement of RSC except those specified.

The QC plan must include:

1. Names and qualifications of the lead QC manager and assistant QC managers
2. Contingency plan for correcting problems in production, transportation, or placement, including the quantity and location of standby material
3. Provisions for determining if RSC placement must be suspended and temporary roadway pavement structure constructed
4. Outline procedure for the production, transportation, and placement of RSC
5. Outline procedure for sampling and testing to be performed during and after RSC construction
6. Forms to report concrete inspection, sampling, and testing
7. Location of your quality control testing laboratory and testing equipment during and after paving operations
8. List of the testing equipment to be used, including the date of last calibration
9. Names and certifications of quality control personnel including those performing sampling and testing
10. Outline procedure for placing and testing trial slabs, including:
    - 10.1. Locations and times
    - 10.2. Production procedures
    - 10.3. Placement and finishing methods
    - 10.4. Sampling methods, sample curing, and sample transportation
    - 10.5. Testing and test result reporting

Add to section 41-9.01D(4):

During trial slab construction, sample and split the aggregate for grading, cleanness value, and sand equivalent testing.

Within 20 minutes after delivery of rapid strength concrete for trial slabs, fabricate test beams under California Test 524. Use beams to determine early age and 7-day modulus of rupture values.

Cure beams fabricated for early age testing such that the monitored temperatures in the beams and the slab are always within 5 degrees F. Monitor and record the internal temperatures of trial slabs and early age beams at intervals of at least 5 minutes. Install thermocouples or thermistors connected to strip-chart recorders or digital data loggers to monitor the temperatures. Temperature recording devices must be accurate to within ±2 degrees F. Measure internal temperatures at 1 inch from the top, 1 inch from the bottom, and no closer than 3 inches from any edge until early age testing is completed.

Cure beams fabricated for 7-day testing under California Test 524 except place them into sand at a time that is from 5 to 10 times the final set time, or 24 hours, whichever is earlier.

Replace section 41-9.01D(5) with:

41-9.01D(5) Quality Control Testing

41-9.01D(5)(a) General

Provide a testing laboratory to perform quality control tests. Maintain sampling and testing equipment in proper working condition. Perform sampling under California Test 125.

41-9.01D(5)(b) Rapid Strength Concrete

Perform quality control sampling, testing, and inspection throughout RSC production and placement. Before any sampling and testing, give the Engineer at least 2 business days notice. Give the Engineer unrestricted access to your quality control inspectors, samplers, testers, and laboratories. Submit test results within 15 minutes of test completion. Record inspection, sampling, and testing on the forms accepted with the QC plan and submit them within 48 hours of completion of each paving shift and within 24 hours of the 7-day modulus of rupture tests.

Provide continuous process control and quality control sampling and testing throughout RSC production and placement.

During production of RSC, sample and test aggregates at least once for every 650 cubic yards of RSC produced, but not less than once per placement shift. Test aggregates for compliance with gradations, cleanness value, and sand equivalent specifications.

At least once for every 650 cubic yards of RSC produced, but not less than twice per placement shift, sample and test for:

1. Yield
2. Penetration
3. Air content
4. Unit weight

During placement of RSC, fabricate beams and test for the modulus of rupture within the first 30 cubic yards, at least once every 130 cubic yards, and within the final truckload.

If requested, submit split samples and fabricate test beams for the Department’s testing.

For determining the early age modulus of rupture, cure beams under the same conditions as the pavement until 1 hour before testing. Cure beams fabricated for the 7-day test under California Test 524.

Testing laboratories and testing equipment must comply with the Department's Independent Assurance Program.

If RSC does not conform to the mix design requirements or the specifications, provide extra samples and testing. Sampling, fabricating, transporting, and testing extra samples is change order work. If the extra samples do not comply with the specifications, these costs are at your expense. If the extra samples comply with the specifications, the Department pays you for these costs.

Replace section 41-9.01D(6)(b) with:

Test and correct high points determined by a 12-foot straightedge placed parallel with and perpendicular to the centerline. Straightedge smoothness specifications do not apply to the pavement surface placed within 12 inches of existing concrete pavement except you must place a straightedge longitudinally with the midpoint coincident with the transverse construction joint. The concrete pavement surface must be within 0.02 foot of the straightedge's lower edge.

Replace section 41-9.01D(6)(c) with:

RSC pavement must develop a minimum modulus of rupture of 400 psi at opening age. RSC pavement must develop a minimum modulus of rupture of 600 psi at 7 days after placement. The Engineer may accept RSC pavement that does not attain the specified modulus of rupture under section 40-9.04B. The Engineer uses your modulus of rupture test results for accepting or rejecting the replacement pavement and pay factor adjustment for low modulus of rupture.

Add to section 41:

41-11 DOWEL BAR SLOTS

41-11.01 GENERAL

41-11.01A Summary

Section 41-11 includes specifications for cutting and filling slots for the dowels in existing and precast concrete pavement.

41-11.01B Definitions

transverse joint: Joint that runs from one longitudinal edge of the concrete slab to the opposite or adjacent longitudinal edge of the slab.

41-11.01C Quality Control and Assurance

41-11.01C(1) General

Concrete surrounding the dowel bars must be free of unconsolidated regions.

41-11.01C(2) Preinstallation Training

Before cutting slots for dowel bars, provide preinstallation training for your personnel and the Engineer's representatives. Your trainer must be authorized by the Engineer.

Your attendees must include:

1. Project superintendent
2. Project manager
3. QC personnel
4. Workers and your subcontractor's workers including:
   - 4.1. Foremen
   - 4.2. Equipment operators
   - 4.3. Inspectors
   - 4.4. Samplers
   - 4.5. Testers

Training must be:

1. 2 hours long
2. Held during normal working hours
3. Held no more than 2 weeks before work begins

Training must include the elements of construction including:

1. Dowel bar slots including:
   1.1. Saw cutting
   1.2. Concrete removal
   1.3. Slot cleaning and preparation
2. Concrete backfill production and placement
3. Opening to traffic and contingencies

You may request authorization of a waiver of the preinstallation training. Include verification of prior work for the Department and documentation of prior training of your personnel.

41-11.02 MATERIALS

41-11.02A General

Reserved

41-11.02B Caulk

Caulk must be at least 50 percent silicone, designated as a concrete sealant, and comply with ASTM C834.

41-11.02C Foam Insert

The foam insert must be stable in the presence of the freshly mixed polyester concrete. Foam insert must be either:

1. Closed-cell foam faced with poster board material or plastic-faced material on each side
2. Rigid foam material

41-11.02D Dowel Bar Support Chairs

Dowel bar support chairs must comply with ASTM A884/A884M or ASTM A934/A934M for epoxy-coated steel or be fabricated from non-corroding material that is stable in the freshly mixed polyester concrete. The chairs must firmly hold the dowel bars centered in the slots and a minimum of 1/2 inch above the bottom of the slot while the concrete backfill is placed and consolidated.

41-11.02E Dowel Bar Expansion Cap

Expansion caps must:

1. Be made of commercial-quality non-corroding material that is stable in the freshly mixed polyester concrete
2. Be tight-fitting
3. Allow a minimum of 1/4 inch of movement at each end of the bar

41-11.02F Dowel Bar Lubricant

Section 40-1.02D does not apply. Lubricant must prevent polyester concrete from bonding to the dowel bar without interfering with the polymerization and not damage the epoxy coating.

41-11.02G Concrete Backfill

Use polyester concrete to backfill dowel bar slots.

The combined aggregate grading for polyester concrete must comply with gradation C.

41-11.03 CONSTRUCTION

41-11.03A General

Temporary pavement structure must be 3/8-inch HMA Type A placed to the full slot depth. Place building paper against the dowel bar slot surfaces before placing temporary pavement structure.

41-11.03B Saw Cutting

Before saw cutting, survey the existing traffic striping, pavement markings, and pavement markers to determine where delineation repairs will be required. Make 2 saw cuts in the pavement to outline the longitudinal sides of each dowel bar slot. The saw cuts for the dowel bar slots must be parallel to each other and to the longitudinal joints with a maximum tolerance of 1/4 inch. Saws must have gang-mounted diamond blades to provide the specified saw-cut spacing. Adjust the length of the slots at skewed joints to meet the minimum dimensions shown on the plans. Immediately remove concrete debris, water residue, and paste with a high-powered mobile vacuum that minimizes dust.

41-11.03C Removing Concrete

Remove concrete between saw cuts within 8 days of cutting dowel bar slots. Concrete removal must not damage the remaining pavement. Do not use jack hammers heavier than 38 pounds. If concrete removal damages the remaining pavement, stop concrete removal and inform the Engineer of corrective action before resuming removal activities.

After removing large concrete pieces with a jack hammer, use a small hammerhead to chip off rocks and burrs from the slot bottom. Slot bottoms must be parallel to the existing concrete surface.

41-11.03D Cleaning and Preparing Slot

Clean exposed surfaces in the dowel bar slot by sand blasting until clean aggregate is exposed. Where performing sand-blasting operations within 10 feet of a lane open to traffic, remove the residue, including dust, immediately after the sand contacts the surface being blasted. Remove the residue with a vacuum attachment operating concurrently with the sand blasting equipment.

Vacuum the dowel bar slot to remove debris, excess moisture, and residue. Immediately after vacuuming the dowel bar slot, clean the slot with compressed air free of moisture and oil. Air compressors must deliver air at a minimum of 120 cfm and develop 90 psi of nozzle pressure.

41-11.03E Sealing Joints

After cleaning the dowel bar slot, seal the existing transverse joint with caulk at the bottom and sides of the slot. Any surface receiving caulk must be clean and dry. Place caulk a minimum of 1/2 inch beyond the edges of the slot in the existing transverse joint.

41-11.03F Placing Dowel Bars

Clean the surface of dowel bars before applying dowel bar lubricant. Lightly coat the dowel bar with dowel bar lubricant. Do not allow lubricant to drip onto the slot walls or bottom. Place dowel bars within a tolerance of 1/4 inch: to the depth shown, parallel to the longitudinal joint and the pavement surface, and centered along the slot width. Center the dowel bars at the transverse joint within a tolerance of 1 inch. Provide at least 1/2-inch clearance between the dowel bar bottom and the slot bottom.

Place a foam insert at the middle of the dowel bar to maintain the transverse joint opening. Remove any existing joint seal material to accommodate the foam insert. Stabilize the foam insert with two 1/2 by 1/2-inch tabs before placing concrete backfill. The foam insert must remain in a vertical position and not leak during concrete placement.

41-11.03G Placing Concrete Backfill

After dowel bars, expansion caps, support chairs, foam inserts, and caulk are placed, backfill dowel bar slots with polyester concrete.

Polyester concrete must be placed while it is plastic and workable.

Consolidate polyester concrete with a small handheld vibrator. The vibrator must be capable of thoroughly consolidating the polyester concrete material into the slot and around the dowel bar and dowel bar support chairs.

41-11.03H Finishing Concrete

Finish the polyester concrete surface so the aggregate in the concrete is even with or above the surrounding concrete surface. If the aggregate settles after initial finishing you may add aggregate. Resin may be added if needed. Remove excess resin.

41-11.03I Opening to Traffic

41-11.03I(1) General

Cover or fill the slots before opening to traffic.

41-11.03I(2) Polyester Concrete

Polyester concrete must be in place at least 4 hours before opening to traffic.

You may submit a request for authorization to use an opening age of less than 4 hours. Your request must include certified laboratory test results for compressive strength under California Test 551 or ASTM C109, conducted at material and ambient temperatures of 68 degrees F or less. The opening age must not be less than the time calculated using the following table:

Time to reach 1250 psi compressive strength (hours:minutes)	Minimum opening age (hours:minutes)
0:10–1:29	2:15
1:30–1:49	2:30
1:50–2:09	2:45
2:10–2:29	3:15
2:30–2:49	3:30
2:50–3:29	3:45
3:30 or more	4:00

Determine the initial set time for polyester concrete under ASTM C266. Add 2 minutes to the opening time for each 1 minute the initial set time exceeds 30 minutes

41-11.03J Grinding Pavement

Grind concrete pavement lanes under section 42. If sealing joints, grind before sawing and sealing the joints.

Grind within 30 days from the initial saw cutting for the dowel bar slots and at least 12 hours after placing polyester concrete.

41-11.04 PAYMENT

Payment for dowel bar slots is included in the payment for PPCP.

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42 GROOVE AND GRIND CONCRETE

Add to section 42-3.03C:

Grind existing concrete pavement that is adjacent to new lanes of concrete pavement as shown. Grind before paving.

Replace "profilograph" in item 2 in the 4th paragraph of section 42-3.03C with:

Inertial profiler

Replace "25" in item 2 in the 4th paragraph of section 42-3.03C with:

15

Replace "profile index" in item 4 in the 4th paragraph of section 42-3.03C with:

concrete pavement smoothness

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DIVISION VI STRUCTURES

51 CONCRETE STRUCTURES

Add to section 51-5.04:

Excavation and Backfill at Paving Notch Extensions must comply with section 19-3 and are included in the payment for Paving Notch Extension.

Replace "Reserved" in section 51-7.02 with:

51-7.02A General

51-7.02A(1) Summary

Section 51-7.02 includes specifications for constructing PC drainage inlets.

51-7.02A(2) Definitions

Reserved

51-7.02A(3) Submittals

For inlets with oval or circular cross sections, submit shop drawings with calculations. Shop drawings and calculations must be sealed and signed by an engineer who is registered as a civil engineer in the State. Allow 15 days for the Engineer's review.

Submit field repair procedures and a patching material test sample before repairs are made. Allow 10 days for the Engineer's review.

51-7.02A(4) Quality Control and Assurance

The Engineer may reject PC drainage inlets exhibiting any of the following:

1. Cracks passing through walls more than 1/16 inch wide
2. Nonrepairable honeycombed or spalled areas of more than 6 square inches
3. Noncompliance with reinforcement tolerances or cross sectional area shown
4. Wall or lid less than minimum thickness
5. Internal dimensions less than plan dimensions by 1 percent or 1/2 inch, whichever is greater
6. Defects affecting performance or structural integrity

51-7.02B Materials

51-7.02B(1) General

Nonshrink grout must be a dry, packaged type complying with ASTM C 1107.

Concrete for basin or inlet floors placed in the field must comply with the specifications for minor concrete.

Joint sealant must be butyl-rubber complying with ASTM C 990. Joint primer must be recommended by the joint seal manufacturer.

Resilient connectors must comply with ASTM C 923.

Sand bedding must comply with section 19-3.02E.

Bonding agents must comply with ASTM C 1059, Type II.

51-7.02B(2) Fabrication

If oval or circular shape cross-sections are furnished, they must comply with *AASHTO LRFD Bridge Design Specifications, Fourth Edition with California Amendments*.

Wall and slab thicknesses may be less than the dimensions shown by at most 5 percent or 3/16 inch, whichever is greater.

Reinforcement placement must not vary more than 1/2 inch from the positions shown.

Cure PC drainage inlets under section 90-4.03.

51-7.02C Construction

Repair PC drainage inlet sections to correct damage from handling or manufacturing imperfections before installation.

Center pipes in openings to provide a uniform gap. Seal gaps between the pipe and the inlet opening with nonshrink grout under the grout manufacturer's instructions. For systems designated as watertight, seal these gaps with resilient connectors.

Match fit keyed joints to ensure uniform alignment of walls and lids. Keys are not required at the inlet floor level if the floor is precast integrally with the inlet wall. Seal keyed joint locations with preformed butyl rubber joint sealant. You may seal the upper lid and wall joint with grout.

Clean keyed joint surfaces before installing sealant. Joint surfaces must be free of imperfections that may affect the joint. Use a primer if surface moisture is present. Use a sealant size recommended by the sealant manufacturer. Set joints using sealant to create a uniform bearing surface.

Flat drainage inlet floors must have a field-cast topping layer at least 2 inches thick with a slope of 4:1 (horizontal:vertical) toward the outlet. Use a bonding agent when placing the topping layer. Apply the bonding agent under the manufacturer's instructions.

51-7.02D Payment

Not Used

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DIVISION VII DRAINAGE

68 SUBSURFACE DRAINS

Replace paragraph 3 of section 68-2.02F(1) with:

Use Class 2 permeable material for underdrains.

Add to section 68:

68-8 SYNTHETIC SUBSURFACE DRAINAGE LAYER

68-8.01 GENERAL

68-8.01A Summary

Section 68-8 includes specifications for constructing synthetic subsurface drainage layer (SSDL).

The SSDL includes nonwoven geotextile filters that are factory-laminated to the top and bottom of a triplanar geonet core.

The synthetic subsurface drainage layer (SSDL) for concrete pavement uses a RoaDrain product, manufactured by SynTec, a GSE Environmental company, and distributed by Tensar International Corporation. The SSDL uses a product designated by specific trade name to obtain a necessary item that is only available from one source and to determine the product's suitability for future use. Section 6-3.02 does not apply to the SSDL.

68-8.01B Submittals

At least three weeks before the scheduled delivery of the SSDL to the project site, submit an SSDL Submittal Package, as an informational submittal, to the Engineer, consisting of:

1. The SSDL manufacturer's product brochure, material specification, and information for transporting, storage, handling, repair, seaming and installation. Include information for installation adjacent to underdrains or other water collection structure shown on the project plans.
2. Any strategies, beyond the manufacturer's general installation recommendations, for constructing SSDL and placing of concrete pavement without damaging the concrete base below the SSDL.
3. A certificate of compliance that the SSDL is engineered to remove subsurface water, maintain a flow void, prevent migration of fines, and is suitable for installation directly beneath concrete pavement.
4. A certificate of compliance, or a copy of test results, confirming a flow rate of "Excellent" as described in the AASHTO Guide for Design of Pavement Structures, 1993.
5. A certificate of compliance certifying that the SSDL meets or exceeds the SSDL material property values described in this section.
6. A placement plan for SSDL showing proposed location, nominal dimensions of each SSDL panel, and alignment. Show proposed seams of adjacent SSDL panels. Show proposed concrete pavement joints within 3 feet of similarly aligned (longitudinal and transverse) proposed SSDL seams.
7. List of equipment proposed for use in offloading, handling and placement of SSDL.
8. A sample of the proposed core edge wrap of exposed geonet core edges. The wrap may be achieved by sewing, heat bonding, an approved spray adhesive or by applying duct tape. If sewing will be used, include information about the thread type and size, stitch pattern and spacing.
9. A sample of the proposed seam of adjacent panels.
10. A sample of the proposed geotextile filter repair. The adhesive used must be one approved by the SSDL manufacturer. Include a list of adhesives approved by the manufacturer and their application.
11. A sample of the proposed geonet core repair.

68-8.02 Materials

The SSDL must comply with the values in the following table:

Property	Test method	Unit	Value	Remark
Tri-Planar Geonet Core (Prior to Lamination)				
Density	ASTM D792	g/cm^3	0.94-0.96	Range
Carbon Black	ASTM D4218	%	2-3	Range
Rib Spacing (top & bottom)	Calipered	inch	0.4	Typical
Central Rib Spacing	Calipered	inch	0.5	Typical
Unsupported Aperture Area	Calipered	square inch	0.3	Max
Thickness	ASTM D5199	mil	300	±10%
Nonwoven Geotextile Filter (Prior to Lamination)				
Strength	ASHTO M288	Exceeds Class 1		
UV Resistance (500 hrs)	ASTM D4355	%	70	MARV
AOS	ASTM D4751	US Std Sieve	80	Max ARV
Permittivity	ASTM D4491	1/sec	1.1	MARV
Water Flow Rate	ASTM D4491	gpm per sq ft	90	MARV
SSDL Performance				
Pavement Fatigue Number of cycles before cracks propagate		Cycles	3000	Note 1
Capillary Barrier	ASTM 5918	Effective		
Coefficient of Permeability	ASTM D4716	ft/day	56,700	Note 2
Dimensions & Flow Orientation				
Roll Size	12.75 ft x 200 ft (3.89 m x 61 m)			
Direction of Primary Flow	Across the roll width @ approximately 45^{o}			

MARV = Minimum Average Roll Value. ARV = Average Roll Value.
Note 1: Test performed on a concrete beam supported by the SSDL overlying a clay subgrade. The Stress Ratio defined as: Load Stress/Flexural Strength of the Concrete Beam = 0.83.
Note 2: Coefficient of permeability is calculated with the measured SSDL transmissivity and the nominal core thickness. SSDL transmissivity is tested along the primary flow direction with the boundary conditions as follows: steel plate/Ottawa sand/SSDL/Ottawa sand/steel plate, one hour seating period @ 15,000 psf and gradient 2%.

On arrival at the site, physically inspect the SSDL rolls. Verify the materials are the proper type and grade.

An SSDL roll or panel with damage or direct sunlight exposure beyond manufacturer's recommendations, or exceeding the placement time period before being covered by concrete pavement, may be rejected by the Engineer. Damaged SSDL may be repaired if approved by the Engineer. Replacement or repair of rejected SSDL is at your expense.

Store SSDL rolls and panels in a clean and dry environment, off the ground, out of direct sunlight and protected from excessive heat, cold, mud, dirt, and dust.

68-8.03 Construction

Use SSDL only where shown.

Before placing SSDL, remove loose or extraneous material and sharp objects that may come in contact with the SSDL material.

Place SSDL:

1. Under manufacturer's instructions
2. Longitudinally along the roadway alignment. Avoid placing a seam of two adjacent SSDL panels directly below concrete pavement joints.
3. Without wrinkles

Until concrete pavement placement over SSDL, temporarily secure edges of SSDL per the manufacturer's recommendations or another strategy appropriate for the base material.

Do not:

1. Stockpile material on the SSDL.
2. Place more SSDL than can be covered by concrete pavement in 96 hours.
3. Exceed the manufacturer's recommendations for use of vehicles or equipment on SSDL material.

Equipment operating on or near the SSDL must have its exhaust directed away from the SSDL.

All exposed geonet core edges (except the edge connected to an underdrain or other water collection structure) must be wrapped with a strip of geotextile and secured utilizing sewing, heat bonding, an approved spray adhesive or by applying duct tape. If heat bonding will be used, each proposed operator must demonstrate on a test portion, in the Engineer's presence, the method and technique that results in a proper bond without burning through the geotextile. Two consecutive successful heat bonding samples are required.

Overlap geonet cores of adjacent panels and end-to-end panels at least 3 inches. If placed on material with an R-value greater than 20, the panel cores may be butted tight together, along the length and end-to-end, without overlap.

Tie geonet cores of panels every 5 ft along their length and every 2 ft along their width. Use plastic cable ties with a minimum tensile strength of 50 lbs.

For adjacent and end-to-end placement, seam panels by either tucking and overlapping the geotextile, or by placing a separate 1-foot wide strip of geotextile over the geotextile meeting at cores that are butted tight together, per manufacturer's recommendations. Sealing of seams is required.

At underdrains (or similar water collection structure), keep the SSDL bottom geotextile from lying over the underdrain trench. Seam by tucking the top geotextile under the filter fabric flap covering the top of the underdrain trench. Seal the seam.

Seal seams (overlaps and strips of geotextile) with a method described for the core edge wrap of exposed geonet core edges. If heat bonding is used, each operator must complete the demonstration requirements.

Prior to placing concrete pavement, physically inspect the SSDL for damage. Damaged SSDL must be replaced, or repaired if approved by the Engineer.

Spray the SSDL with a fine mist of water just ahead of the paving machine. Maintain a moist surface per the manufacturer's recommendations.

68-8.03A Repair

Obtain the Engineer's authorization before repairing damaged SSDL. Maintain a log of the locations and the repair performed. Submit a copy of the log to the Engineer. Repair SSDL as follows:

68-8.03A(1) Geotextile Damage Repair

Patch small holes (less than 4 inches at its largest dimension) in the geotextile filter with an 8" x 8" geotextile patch. Increase the patch dimension as needed to extend at least 2 inches beyond the edge of the damage, and also to a size sufficient for seaming if required.

Patch larger holes (greater than 4 inch at its largest dimension but not damaged beyond 50% of the width of the panel) in the geotextile filter with a geotextile patch that extends 3 feet beyond the edge of the damage.

Patch holes greater than 50% of the width of the panel with a full-width piece of geotextile patch with a length that extends 3 feet beyond the edge of the damage.

Prepare and secure the patch as follows and complying with the adhesive's recommended usage and cure times:

1. Spray an approved adhesive on one side of the geotextile patch.
2. Center and apply the geotextile patch over the hole.
3. Firmly press the geotextile patch over the damaged area. Ensure uniform contact and adhesion.
4. Additionally, a patch that is the full-width of the damaged panel, or extends to an adjacent panel, must be seamed (overlap or separate strip) to the adjacent panel. Seal the seam.

Check and wrap any exposed geonet core edges.

68-8.03A(2) Geonet Damage Repair

Repair the damaged geonet portion of the placed SSDL with a geonet or SSDL patch extending 12 inches beyond the edges of the damaged area. If the damaged geonet portion of the placed SSDL is more than 50% of the width of the panel, cut out the entire full width damaged section and place a new geonet core. Seam the new to the remaining original geonet core along the length and end-to-end using an overlap (or butted tight together if the R-value permits). Tie the geonet core of the patch to the remaining original geonet core every 6 inches along its perimeter using plastic cable ties. Seam the length and end-to-end portions. Seal the seams. Check and wrap any exposed geonet core edges.

68-8.04 PAYMENT

Not Used

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DIVISION IX TRAFFIC CONTROL FACILITIES

83 RAILINGS AND BARRIERS

Replace item 1 in the 7th paragraph of section 83-1.02B with:

1. Steel posts

Replace item 2 in the 7th paragraph of section 83-1.02B with:

2. Plastic blocks for line posts

Replace section 83-1.02C(2) with:

83-1.02C(2) Alternative In-Line Terminal System

Alternative in-line terminal system must be furnished and installed as shown on the plans and under these special provisions.

The allowable alternatives for an in-line terminal system must consist of one of the following or a Department-authorized equal.

1. TYPE SKT TERMINAL SYSTEM - Type SKT terminal system must be a SKT 350 sequential kinking terminal manufactured by Road Systems, Inc., located in Big Spring, Texas, and must include items detailed for Type SKT terminal system shown on the manufacturer's plans and installation instructions. The SKT 350 sequential kinking terminal can be obtained from the distributor, Universal Industrial Sales, P.O. Box 699, Pleasant Grove, UT 84062, telephone (801) 785–0505 or from the distributor, Gregory Highway Products, 4100 13th Street, S.W., Canton, OH 44708, telephone (330) 477–4800.

2. TYPE ET TERMINAL SYSTEM - Type ET terminal system must be an ET-2000 PLUS (4-tube system) extruder terminal as manufactured by Trinity Highway Products, LLC, and must include items detailed for Type ET terminal system shown on the manufacturer's plans and installation instructions. The ET-2000 PLUS (4-tube system) extruder terminal can be obtained from the manufacturer, Trinity Highway Products, LLC, P.O. Box 99, Centerville, UT 84012, telephone (800) 772–7976.

3. TYPE X-TENSION TERMINAL SYSTEM - Type X-tension terminal system must be a in-line Energy Absorbing Non-Gating Terminal manufactured by Barrier Systems Inc, located in Vacaville, California, and must include items detailed for X-Tension guardrail end terminal shown on the manufacturer's plans and installation instructions. The in-line Energy Absorbing Non-Gating Terminal can be obtained from the distributor, Statewide Traffic Safety & Signs, 13755 Blaisdell Pl, Poway, CA 92064, telephone (800) 547-9683.

Submit a certificate of compliance for terminal systems.

The Contractor must provide the Engineer with a copy of the manufacturer's installation manual.

Terminal systems must be installed under the manufacturer's installation instructions and these specifications. Each terminal system installed must be identified by painting the type of terminal system in neat black letters and figures 2 inches high on the backside of the rail element between system posts numbers 4 and 5.

For Type ET terminal system, the steel foundation tubes with soil plates attached must be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer must be moistened and thoroughly compacted. The wood terminal posts must be inserted into the steel foundation tubes by hand and must not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts must be coated with a grease that will not melt or run at a temperature of 149 degrees F or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

For Type SKT terminal system, the soil tubes must be, at the Contractor's option, driven with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer must be moistened and thoroughly compacted. Wood posts must be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts must be coated with a grease that will not melt or run at a temperature of 149 degrees F or less. The edges of the wood posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

After installing the terminal system, dispose of surplus excavated material in a uniform manner along the adjacent roadway where designated by the Engineer.

For Type X-tension terminal system, the steel post and soil anchor must be, at the Contractor's option, driven with or without pilot holes, or places in drilled holes. Space around the steel post and soil anchors must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches and each layer must be moistened and thoroughly compacted. Wood terminal posts must be inserted by hand and backfilled in the same manner as the steel post and soil anchor. Wood terminal posts shall not be driven.

Replace section 83-1.02C(3) with:

83-1.02C(3) Alternative Flared Terminal System

Alternative flared terminal system must be furnished and installed as shown on the plans and under these special provisions.

The allowable alternatives for a flared terminal system must consist of one of the following or a Department-authorized equal.

1. TYPE FLEAT TERMINAL SYSTEM - Type FLEAT terminal system must be a Flared Energy Absorbing Terminal 350 manufactured by Road Systems, Inc., located in Big Spring, Texas, and must include items detailed for Type FLEAT terminal system shown on the manufacturer plans and installation instructions. The Flared Energy Absorbing Terminal 350 can be obtained from the distributor, Universal Industrial Sales, P.O. Box 699, Pleasant Grove, UT 84062, telephone (801) 785–0505 or from the distributor, Gregory Industries, Inc., 4100 13th Street, S.W., Canton, OH 44708, telephone (330) 477–4800.

2. TYPE SRT TERMINAL SYSTEM - Type SRT terminal system must be an SRT-350 Slotted Rail Terminal (8-post system) as manufactured by Trinity Highway Products, LLC, and must include items detailed for Type SRT terminal system shown on the manufacturer plans and installation instructions. The SRT-350 Slotted Rail Terminal (8-post system) can be obtained from the manufacturer, Trinity Highway Products, LLC, P.O. Box 99, Centerville, UT 84012, telephone (800) 772–7976.

3. TYPE X-TENSION TERMINAL SYSTEM - Type X-tension terminal system must be a Flared Energy Absorbing Non-Gating Terminal manufactured by Barrier Systems Inc, located in Vacaville, California, and must include items detailed for X-Tension guardrail end terminal shown on the manufacturer plans and installation instructions. The Flared Energy Absorbing Non-Gating Terminal can be obtained from the distributor, Statewide Traffic Safety & Signs, 13755 Blaisdell Pl, Poway, CA 92064, telephone (800) 547-9683.

Submit a certificate of compliance for terminal systems.

The Contractor must provide the Engineer with a copy of the manufacturer's installation manual.

Terminal systems must be installed under the manufacturer's installation instructions and these specifications. Each terminal system installed must be identified by painting the type of terminal system in neat black letters and figures 2 inches high on the backside of the rail element between system posts numbers 4 and 5.

For Type SRT terminal system, the steel foundation tubes with soil plates attached must be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer must be moistened and thoroughly compacted. The wood terminal posts must be inserted into the steel foundation tubes by hand and must not be driven. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts must be coated with a grease that will not melt or run at a temperature of 149 degrees F or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

For Type FLEAT terminal system, the soil tubes must be, at the Contractor's option, driven with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer must be moistened and thoroughly compacted. Wood posts must be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts must be coated with a grease that will not melt or run at a temperature of 149 degrees F or less. The edges of the wood posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

For Type X-tension terminal system, the steel post and soil anchor must be, at the Contractor's option, driven with or without pilot holes, or placed in drilled holes. Space around the steel post and soil anchors must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches and each layer must be moistened and thoroughly compacted. Wood terminal posts must be inserted by hand and backfilled in the same manner as the steel post and soil anchor. Wood terminal posts shall not be driven.

Replace section 83-2.02E(2) with:

83-2.02E(2) Alternative Crash Cushion

Alternative Crash Cushion must be furnished and installed as shown on the manufacturer's plans, installation instructions and in conformance with the provisions in the Standard Specifications and these special provisions.

Alternative Crash Cushion must consist of one of the following National Cooperative Highway Research Program (NCHRP) Report 350 Test Level 3 devices:

Type REACT 9CBB Crash Cushion

1. Type REACT 9CBB is a non-gating, redirective impact attenuator crash cushion manufactured by Energy Absorption Systems, Inc. 35 East Wacker Drive, Suite 1100, Chicago, IL 60601-2076, telephone (312) 467-6750, fax (312) 467-1356. The REACT 350 crash cushion must include items detailed for the REACT 9CBB Crash Cushion as shown on the manufacturer plans and installation instructions (manufacturer's product description for the crash cushion is REACT 350-36" Side Mounted Anchor System) The crash cushion may be obtained from the distributor, National Trench Safety LLC, 1421 N. Baxter Street, Anaheim, CA 92806, telephone (714) 491-7393.

Type COMPRESSOR Crash Cushion

2. The Compressor attenuator must be manufactured by TrafFix Devices, Inc., 160 Avenida La Plata, San Clemente, CA 92673 telephone (949) 361-5663, FAX (949) 361-9205. The Compressor Crash Cushion sytem must include all items detailed on the manufacturer's plans and installation instructions. Compressor crash cushion may be obtained from the distributor, Main Street Materials, 27128A Paseo Espada, Suite #1524, San Juan Capistrano, CA 92675, telephone (888) 787-3387.

Type SMART CRASH CUSHION (SCI 100GM)

3. The SMART Crash Cushion (SCI 100GM) is a non-gating, redirective impact attenuator crash cushion manufactured by SCI Products Inc.,2500 Production Drive, St. Charles, IL 60174-9081, telephone (800) 327-4417, fax (630) 377-9270. The SCI 100 GM Crash Cushion sytem must include all items detailed on the manufacturer plans and installation instructions. The SCI 100 GM crash cushion may be obtained from the distributor, D&M Traffic Services, 845 Reed Street, Santa Clara, CA 95050, telephone (408) 436-1127.

Type QUADGUARD ELITE

4. The QuadGuard Elite Crash Cushion is an 11-bay re-directive, non-gating crash cushion for 36" width protection Model No. QS3611EY and shall be manufactured by Energy Absorption Systems, Inc. of Chicago, Illinois, Telephone (312) 467-6750, FAX (312) 467-1356, (www.energyabsorption.com) and shall include items detailed on the manufacturer's plans and installation instructions. Crash Cushion (QuadGuard Elite) can be obtained from the distributor: National Trench Safety, 7849 Stockton Blvd, Sacramento, CA 95823, Telephone (916) 416-7413.

Submit a certificate of compliance for alternative crash cushion.

Alternative crash cushion shall be installed in conformance with the manufacturer's recommendations.

The Contractor must provide the Engineer with a copy of the manufacturer's installation manual.

Install the crash cushion under the manufacturer's installation instructions. The soil tubes with soil plates attached must be either driven with or without pilot holes, or placed in drilled holes. Space around the soil tubes must be backfilled with selected earth, free of rock, placed in layers approximately 4 inches thick and each layer must be moistened and thoroughly compacted. Wood posts must be inserted into the soil tubes by hand. Before the wood posts are inserted, the inside surfaces of the soil tubes to receive the wood posts must be coated with a grease that will not melt or run at a temperature of 149 degrees F or less. The edges of the wood posts may be slightly rounded to facilitate insertion of the post into the soil tubes.

Concrete anchorage devices used for attaching the crash cushion to the foundation slab must be limited to those provided by the manufacturer.

Concrete anchor slab when required must comply with sections 51 and 52, except the compressive strength must be 4,000 psi at 28 days.

Roadway excavation if required must comply with section 19.

After installing the alternativecrash cushion, dispose of surplus excavated material in a uniform manner along the adjacent roadway where designated by the Engineer.

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84 TRAFFIC STRIPES AND PAVEMENT MARKINGS

Replace "Reserved" in the RSS for section 84-6 with:

84-6.01 GENERAL

84-6.01A Summary

Section 84-6 includes specifications for applying thermoplastic traffic stripes and pavement markings with enhanced wet-night visibility.

Thermoplastic must comply with section 84-2.

84-6.01B Submittals

Submit a certificate of compliance for the glass beads.

84-6.01C Quality Control and Assurance

Within 14 days of applying a thermoplastic traffic stripe or pavement marking with enhanced wet-night visibility, the retroreflectivity must be a minimum of 700 mcd/sq m/lx for white stripes and markings and 500 mcd/sq m/lx for yellow stripes and markings. Test the retroreflectivity using a reflectometer under ASTM E 1710.

84-6.02 MATERIALS

Thermoplastic traffic stripes and pavement markings with enhanced wet-night visibility must consist of a single uniform layer of thermoplastic and 2 layers of glass beads as follows:

1. The 1st layer of glass beads must be on the Authorized Material List under high-performance retroreflective glass beads for use in thermoplastic traffic stripes and pavement markings. The color of the glass beads must match the color of the stripe or marking to which they are being applied.
2. The 2nd layer of glass beads must comply with AASHTO M 247, Type 2.

Both types of glass beads must be surface treated for use with thermoplastic under the bead manufacturer's instructions.

84-6.03 CONSTRUCTION

Use a ribbon-extrusion or screed-type applicator to apply thermoplastic traffic stripe.

Operate the striping machine at a speed of 8 mph or slower during the application of thermoplastic traffic stripe and glass beads.

Apply thermoplastic traffic stripe at a rate of at least 0.38 lb/ft of 4-inch-wide solid stripe. The applied thermoplastic traffic stripe must be at least 0.090 inch thick.

Apply thermoplastic pavement marking at a rate of at least 1.06 lb/sq ft. The applied thermoplastic pavement marking must be at least 0.100 inch thick.

Apply thermoplastic traffic stripe and both types of glass beads in a single pass. First apply the thermoplastic, followed immediately by consecutive applications of high-performance glass beads and then AASHTO M 247, Type 2, glass beads. Use a separate applicator gun for each type of glass bead.

You may apply glass beads by hand on pavement markings.

Distribute glass beads uniformly on traffic stripes and pavement markings. Apply high-performance glass beads at a rate of at least 6 lb/100 sq ft of stripe or marking. Apply AASHTO M 247, Type 2, glass beads at a rate of at least 8 lb/100 sq ft of stripe or marking. The combined weight of the 2 types of glass beads must be greater than 14 lb/100 sq ft of stripe or marking.

84-6.04 PAYMENT

Not Used

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86 ELECTRICAL SYSTEMS

Replace "Reserved" in section 86-1.06B with:

Traffic Management System (TMS) elements include, but are not limited to ramp metering (RM) system, communication system, traffic monitoring stations, video image vehicle detection system (VIVDS), microwave vehicle detection system (MVDS), loop detection system, changeable message sign (CMS) system, extinguishable message sign (EMS) system, highway advisory radio (HAR) system, closed circuit television (CCTV) camera system, roadway weather information system (RWIS), visibility sensor, and fiber optic system.

Existing TMS elements, including detection systems, shown and located within the project limits must remain in place and be protected from damage. If the construction activities require existing TMS elements to be nonoperational or off line, and if temporary or portable TMS elements are not shown, the Contractor must provide for temporary or portable TMS elements. The Contractor must receive authorization on the type of temporary or portable TMS elements and installation method.

Before work is performed, the Engineer, the Contractor, and the Department's Traffic Operations Electrical representatives must jointly conduct a pre-construction operational status check of all existing TMS elements and each element's communication status with the Traffic Management Center (TMC), including existing TMS elements not shown and elements that may not be impacted by the Contractor's activities. The Department's Traffic Operations Electrical representatives will certify the TMS elements' location and status, and provide a copy of the certified list of the existing TMS elements within the project limits to the Contractor. The status list will include the operational, defined as having full functionality, and the nonoperational components.

The Contractor must obtain authorization at least 72 hours before interrupting existing TMS elements' communication with the TMC that will result in the elements being nonoperational or off line. The Contractor must notify the Engineer at least 72 hours before starting excavation activities.

Traffic monitoring stations and their associated communication systems, which were verified to be operational during the pre-construction operational status check, must remain operational on freeway/highway mainline at all times, except:

1. For a duration of up to 15 days on any continuous segment of the freeway/highway longer than 3 miles
2. For a duration of up to 60 days on any continuous segment of the freeway/highway shorter than 3 miles

If the construction activities require existing detection systems to be nonoperational or off line for a longer time period or the spacing between traffic monitoring stations is more than the specified criteria above, and temporary or portable detection operations are not shown, the Contractor must provide provisions for temporary or portable detection operations. The Contractor must receive authorization on the type of detection and installation before installing the temporary or portable detection.

If existing TMS elements shown or identified during the pre-construction operational status check, except traffic monitoring stations, are damaged or fail due to the Contractor's activity, where the elements are not fully functional, the Engineer must be notified immediately. If the Contractor is notified by the Engineer that existing TMS elements have been damaged, have failed or are not fully functional due to the Contractor's activity, the damaged or failed TMS elements, excluding structure-related elements, must be repaired or replaced, at the Contractor's expense, within 24 hours. For a structure-related elements, the Contractor must install temporary or portable TMS elements within 24 hours. For nonstructure-related TMS elements, the Engineer may authorize temporary or portable TMS elements for use during the construction activities.

The Contractor must demonstrate that repaired or replaced elements operate in a manner equal to or better than the replaced equipment. If the Contractor fails to perform required repairs or replacement work, the Department may perform the repair or replacement work and the cost will be deducted from monies due to the Contractor.

A TMS element must be considered nonoperational or off line for the duration of time that active communications with the TMC is disrupted, resulting in messages and commands not transmitted from or to the TMS element.

The Contractor must provide provisions for replacing existing TMS elements within the project limits, including detection systems, that were not identified on the plans or during the pre-construction operational status check that became damaged due to the Contractor's activities.

If the pre-construction operational status check identified existing TMS elements, then the Contractor, the Engineer, and the Department's Traffic Operations Electrical representatives must jointly conduct a post construction operational status check of all existing TMS elements and each element's communication status with the TMC. The Department's Traffic Operations Electrical representatives will certify the TMS elements' status and provide a copy of the certified list of the existing TMS elements within the project limits to the Contractor. The status list will include the operational, defined as having full functionality, and the nonoperational components. TMS elements that cease to be functional between pre and post construction status checks must be repaired at the Contractor's expense.

The Engineer will authorize the schedule for final replacement, the replacement methods and the replacement elements, including element types and installation methods before repair or replacement work is performed. The final TMS elements must be new and of equal or better quality than the existing TMS elements.

If no electrical work exists on the project and no TMS elements are identified within the project limits, the pre-construction operational status check is change order work.

Furnishing and installing temporary or portable TMS elements that are not shown, but are required when an existing TMS element becomes nonoperational or off line due to construction activities, is change order work.

Furnishing and installing temporary or portable TMS elements and replacing TMS elements that are not shown nor identified during the pre-construction operational status check and were damaged by construction activities is change order work.

If the Contractor is required to submit provisions for the replacement of TMS elements that were not identified, submitting the provisions is change order work.

Delete items 2–5 in the list in the 2nd paragraph of section 86-2.06A(2).

Add to section 86-2.06A(2):

Do not place grout in the bottom of the pull box.

Replace "Reserved" in section 86-2.06B of the RSS for section 86-2.06 with:

86-2.06B(1) General

86-2.06B(1)(a) Summary

This work includes installing non-traffic-rated pull boxes.

86-2.06B(1)(b) Submittals

Before shipping pull boxes to the jobsite, submit a list of materials, Contract number, pull box manufacturer, manufacturer's instructions for pull box installation, and your contact information to METS.

Submit reports for pull box from an NRTL-accredited lab.

86-2.06B(1)(c) Quality Control and Assurance

86-2.06B(1)(c)(i) General

Pull boxes may be tested by the Department. Deliver pull boxes and covers to METS and allow 30 days for testing. When testing is complete, you will be notified. You must pick up the boxes and covers from the test site and deliver it to the job site.

Any failure of the pull box or the cover that renders the unit noncompliant with these specifications will be a cause for rejection. If the unit is rejected, you must allow 30 days for retesting. Retesting period starts when the replacement pull box is delivered to the test site. You must pay for all retesting costs. Delays resulting from the submittal of noncompliant materials does not relieve you from executing the Contract within the allotted time.

If the pull box submitted for testing does not comply with the specifications, remove the unit from the test site within 5 business days after notification that it is rejected. If the unit is not removed within that period, it may be shipped to you at your expense.

You must pay for all shipping, handling, and transportation costs related to the testing and retesting.

86-2.06B(1)(c)(ii) Functional Testing

The pull box and cover must be tested under ANSI/SCTE 77, "Specifications for Underground Enclosure Integrity."

86-2.06B(1)(c)(iii) Warranty

Provide a 2-year manufacturer replacement warranty for pull box and cover from the date of installation of the pull box and cover. All warranty documentation must be submitted before installation.

Replacement parts must be provided within 5 business days after receipt of failed pull box, cover, or both at no cost to the Department and must be delivered to the Department's Maintenance Electrical Shop at 7181 Opportunity Road, San Diego, CA 92111.

86-2.06B(2) Materials

The pull box and cover must comply with ANSI/SCTE 77, "Specifications for Underground Enclosure Integrity," for Tier 22 load rating and must be gray or brown in color.

Each pull box cover must have an electronic marker cast inside.

Extension for the pull box must be of the same material as the pull box and attached to the pull box to maintain the minimum combined depths as shown.

Include recesses for a hanger if a transformer or other device must be placed in a pull box.

The bolts, nuts, and washers must be a captive bolt design.

The captive bolt design must be capable of withstanding a torque range of 55 to 60 ft-lb and a minimum pull out strength of 750 lb. Perform the test with the cover in place and the bolts torqued. The pull box and cover must not be damaged while performing the test to the minimum pull out strength.

Stainless steel hardware must have an 18 percent chromium content and an 8 percent nickel content.

Galvanize ferrous metal parts under section 75-1-.05.

Manufacturer's instructions must provide guidance on:

1. Quantity and size of entries that can be made without degrading the strength of the pull box below Tier 22 load rating
2. Where side entries cannot be made
3. Acceptable method to be used to create the entry

Tier 22 load rating must be labeled or stenciled by the manufacturer on the inside and outside of the pull box and on the underside of the cover.

86-2.06B(3) Construction

Do not install pull box in curb ramps or driveways.

A pull box for a post or a pole standard must be located within 5 feet of the standard. Place a pull box adjacent to the back of the curb or edge of the shoulder. If this is impractical, place the pull box in a suitable, protected, and accessible location.

Add to section 86-3.04:

Cabinet must be Model 334L and consist of a housing (B), a mounting cage 1, and the following listed equipment. The equipment must comply with chapter 6 of TEES.

1. Service panel no. 1
2. Power distribution assembly no. 3
3. Input file (I file)
4. C1 harness
5. Controller and equipment shelves
6. Dual fan assembly with thermostatic control
7. Mechanical armature-type relays
8. Input panel

Each power distribution assembly must include the following equipment:

1. Two duplex NEMA 5-15R controller receptacle (rear mount)
2. One 30 A, 1-pole, 120 V(ac) main circuit breaker
3. Three 15 A, 1-pole, 120 V(ac) circuit breaker
4. One duplex GFCI NEMA 15 A, receptacle (front mount)

Furnish 3 shelves as shown. Each shelf must be attached to the tops of 2 supporting angles with 4 screws. Supporting angles must extend from the front to the back rails. The front of the shelf must abut the front member of the mounting cage. Arrange shelves as shown. The angles must be designed to support a minimum of 50 pounds each. The horizontal side of each angle must be a minimum of 3 inches. The angles must be vertically adjustable.

Furnish 3 terminal blocks as shown. Terminal blocks must comply with Chapter 6 of TEES, except the screw size must be 8-32.

Furnish a maintenance manual or a combined maintenance and operation manual for all controller units, auxiliary equipment, vehicle detector sensor units, control units, and amplifiers. Submit manual when the controllers are delivered for testing or, if ordered by the Engineer, before purchasing. The manual must include the following:

1. Specifications
2. Design characteristics
3. General operation theory
4. Function of all controls
5. Troubleshooting procedure (diagnostic routine)
6. Block circuit diagram
7. Geographical layout of components
8. Schematic diagrams
9. List of replaceable component parts with stock numbers

Add to section 86-5.01A(1):

Do not saw slots for detector loops until after the concrete pavement has been ground, straight-edged and brought into tolerance.

Loop wire must be Type 2.

Loop detector lead-in cable must be Type B.

Slots must be filled with elastomeric sealant or hot-melt rubberized asphalt sealant.

The depth of the loop sealant above the top of the uppermost loop wire in the sawed slots must be 2 inches, minimum.

Add to section 86-5:

86-5.03 Weigh Station Bypass System

86-5.03A General

86-5.03A(1) Summary

Weigh Station Bypass System includes a high speed weigh-in-motion (WIM) system which provides for single threshold weighing, and operates over a speed range of 5 mph to 100 mph. Single threshold weighing consists of a scale or scales in each lane of travel. The weigh sensors cover the entire lane width of 12 feet. The high speed WIM system includes equipment and software for collecting, processing, storing, transmitting (to a host computer) and manipulating information related to the counting, classifying, and speed monitoring of all vehicles and the weighing of trucks and buses.

High speed weigh-in-motion (WIM) system reports and output are included in the Information Handout.

86-5.03A(2) Definitions

ESAL: Equivalent Single Axle Load.

FHWA: Federal Highway Administration.

TMG: FHWA Traffic Monitoring Guide.

WIM Engineer: Representative from the Department WIM Office.

86-5.03A(3) Submittals

Furnish the following before concrete pavement operations begin and allow 10 working days for review:

1. Your proposed high speed WIM system component installation milestones describing the sequence of WIM component installation and preparation requirements, both in coordination with applicable concrete pavement operations
2. Your proposed high speed WIM system testing schedule based on the component installation milestones.

Furnish manufacturer's product brochures for the high speed WIM system on-site components except the interconnecting cables and miscellaneous materials. Allow 5 working days for review.

Furnish operation and maintenance manuals for the Central Unit, the inductive loop detector sensor units, WIM scales, axle sensors and System Program. Allow 5 working days for review. The manuals may be combined into one manual. The manual(s) must include, but are not limited to, the following items:

1. Specifications.
2. Design characteristics.
3. General operation theory.
4. Function of all controls.
5. Trouble shooting procedure (diagnostic routine).
6. Block circuit diagram.
7. Geographical layout of components.
8. Schematic diagrams.
9. List of component parts with stock numbers.
10. Documentation for application software.

86-5.03A(4) Quality Control and Assurance

86-5.03A(4)(a) Functional Requirements

86-5.03A(4)(a)(1) General

The high speed WIM system must provide for calibration features such that the required accuracies can be met at all speeds within the operating speed range set forth in these special provisions.

The high speed WIM system must be able to accommodate vehicles and vehicle combinations with up to nine axles and must automatically determine for each vehicle, by lane of travel:

1. Weight of each axle:

Accuracy:	MEAN	STD. DEV.
single axle	±5%	8%
tandem axle	±5%	6%
gross weight	±5%	5%

2. Axle spacing, vehicle length, and speed:

Accuracy:	MEAN	STD. DEV.
Axle spacing	±6" (±0.152 m)	12" (0.305 m)
Vehicle length	±12" (±0.305 m)	18" (0.457 m)
Speed	±1 mph (±1.61 km/h)	2 mph (3.22 km/h)

3. Vehicle classification: The high speed WIM system must provide for a minimum of 15 vehicle classifications. Class 1 through Class 13 must be defined according to Federal Highway Administration's (FHWA) 13-Category Classification System (as shown in Appendix 4-C of the FHWA Traffic Monitoring Guide). Class 14 will identify special vehicles as determined by the user. Class 15 will identify any vehicle which does not conform to the classification criteria for Classes 1 through 14. Classification criteria for Classes 1 through 14 must be programmable by the user.

    3.1. The high speed WIM system must provide sufficient flexibility in programming parameters including number of axles, axle spacing, and weights (gross, or axle and gross) for each of these classes so that accurate classifying is achievable.

4. Invalid measurements: An "invalid measurement" code will be assigned to any vehicle meeting the front axle weight threshold (discussed below) when the left and right wheel weights of any axle have a difference of 40 percent or more; and, either of the wheel weights of such axle exceeds 2.0 kip. Both the 40 percent and 2.0 kip values must be programmable by the operator.

    4.1. Any vehicle assigned an "invalid measurement" code will not be considered a "Weighed Vehicle" but must be classified and counted and all vehicle data must be stored in the vehicle record.

5. Determination of weight violations: For any vehicle meeting the front axle weight threshold (discussed below), the high speed WIM system must determine which, if any, axle(s) or axle grouping(s) exceed the weight limits set forth in the "Weight Violation Table" included in the Information Handout. Any vehicle with one or more weight violations will be coded as to such a violation or combination of violations. The weight limitations set forth in the "Weight Violation Table" must be the default settings. Such weights must be programmable by the user.

86-5.03A(4)(a)(2) Wheel scales

Wheel scales must report weigh data for each wheel track (right axle weight and left axle weight). Such wheel data must be uniform across any section of the scale.

86-5.03A(4)(a)(3) Inductive Loop

Two inductive loop detectors per lane must measure vehicle speed and vehicle length.

86-5.03A(4)(a)(4) Central Unit

The Central Unit must calculate and temporarily stores all specified data on a storage medium. The storage medium must be capable of storing a minimum of seven days of vehicle count data and individual vehicle records. The Central Unit must continue to calculate and store data for all vehicles passing through the system during periods of access, both on-site by portable PC and remotely by the host computer for purposes of programming, real-time view, and downloading of data.

The Central Unit must store the following data:

1. Hourly vehicle counts by class and by speed range for each 24 hour period (Class/Count summary).
2. Individual vehicle records for all vehicles with a front axle weight greater than 3.5 kip (hereafter referred to as "truck records"). The front axle weight threshold for truck records must be programmable by the operator with 3.5 kip as a default setting. Each truck record must include, as a minimum, the following data:

    2.1. Time and Date
    2.2. Lane Number
    2.3. Vehicle Number
    2.4. Speed
    2.5. Vehicle Classification
    2.6. Weight in kips of each wheel or dual set of wheels by left and right side and by axle number
    2.7. Spacing in feet between each sequentially numbered axle
    2.8. Overall length of each vehicle or combination of vehicles in feet
    2.9. Code for weight violation(s)
    2.10. Code for invalid measurement(s)

86-5.03A(4)(a)(5) System Program

Determination of 18 kip equivalent single axle loads must be in accordance with the "Axle Load Equivalency Factor" tables.

86-5.03A(4)(a)(5)(i) Communications Portion

The communications portion of the System Program must meet the following functional requirements:

1. Host computer's modem configuration: The System Program must initialize the host computer's modem so that all necessary operating characteristics are set.
2. Baud rate: The System Program will provide for operation at a minimum rate of 9600 baud.
3. Error control: The System Program must not in any way disable the modems' error checking features, which prevent phone line noise from corrupting data during file downloading.
4. File downloading monitoring: The System Program must display a window that allows the user to monitor the progress of file downloading. The System Program must also provide for the abort of a file download.

86-5.03A(4)(a)(5)(ii) Applications

The System Program must be "user friendly", hierarchical menu driven and must perform the following applications:

1. Real time view: The real time view application must provide for on-line monitoring of traffic. The display on the host computer must depict the axle configuration of each vehicle passing through the site. The contents and format for the real time display must be similar to the sample display included in the Information Handout. The user must have the option of displaying either all traffic or only vehicle classifications 4 through 15 as well as the option of displaying a selected individual lane or all lanes. Printing of the real time data on the host computer printer must be facilitated by means of an on/off toggle key from the keyboard.
2. System data programming: The system data programming application must provide for on-line modification to the Central Unit's software parameters, such as speed and weight calibration factors, vehicle classification parameters, weight violation table parameters, and front axle weight threshold.
3. Manual downloading: The manual downloading application must provide for the downloading of selected daily data files from the storage medium of the Central Unit to the storage medium of the host computer. The System Program must provide for a listing of the daily data files stored in the Central Unit and must provide for user selection of the file or files to be downloaded from such a listing. The System Program must provide for the downloading of the current day's data stored as of the time of downloading.
4. Automatic downloading: The automatic downloading application must provide for unattended downloading of daily data files stored in the Central Unit's storage medium to the storage medium of the host computer. The System Program must provide the following:

    4.1. User's input for the date and time that unattended downloading is to begin.
    4.2. Downloading of all daily files not previously downloaded by the automatic downloading application.
    4.3. At least three attempts to make telephone connection with the Central Unit.
    4.4. At least three attempts to download files from the Central Unit before aborting download.
    4.5. Discontinuation of telephone connection after downloading of files from the Central Unit (or after an abort) and returning the host computer to a standby mode.

5. History file: The history file application must create a daily file that chronologically records events occurring during manual and automatic downloading sessions. Such events must include, but not be limited to, modem result messages, start and end time of each file download and any pertinent messages generated by the System Program. The System Program must provide for either:

    5.1. The history file must be in the form of an ASCII text file which can be viewed or sent to the printer or,
    5.2. A menu selection which must provide for a listing of available history files and user selection of a file to be sent to the printer in the form of a report.

6. Report preparation. The report application must generate specified reports using the downloaded data. Such reports must be sent to the host computer printer. The System Program must prepare the following reports:

    6.1. From vehicle class/count summary file:

        6.1.1. Distribution of class and speed counts by lane
        6.1.2. Distribution of vehicle counts by hour of day by lane
        6.1.3. Distribution of vehicle classifications by hour of day
        6.1.4. Distribution of vehicle classifications by day of month
        6.1.5. Distribution of vehicles by speed by hour of day

    6.2. From individual truck records file:

        6.2.1. Distribution of truck record data by lane
        6.2.2. Distribution of weight violations and invalid measurements for vehicle classification 4 through 15
        6.2.3. Distribution of weight violations by hour of day for vehicle classifications 4 through 14
        6.2.4. Distribution of overweight vehicles by hour of day for vehicle classifications 4 through 14
        6.2.5. Distribution of gross weights for vehicle classifications 4 through 14
        6.2.6. Distribution of 18 kip equivalent single axle loadings (ESALS) by hour of day for vehicle classifications 4 through 14. The System Program provides for user input of:

            6.2.6.1. Pavement type:

                6.2.6.1.1. Flexible pavement and structural number; or,
                6.2.6.1.2. Rigid pavement and slab thickness.

            6.2.6.2. Vehicle status:

                6.2.6.2.1. "All" weighed vehicles (default); or,
                6.2.6.2.2. "Legal only" weighed vehicles; or,
                6.2.6.2.3. "Overweight only" weighed vehicles.

        6.2.7 Distribution of trucks by day of month for classifications 4 through 15

7. Truck record batch print. The truck record batch print application must provide for the display of, and on/off printer toggle of, individual truck records. The System Program must provide for a listing of the daily truck record files available on the storage medium of the host computer and the user's selection of one of those files. The System Program must also provide for the user's selection of the vehicle class or classes for which individual truck records will be displayed or printed as well as the starting hour of day. An example of the truck record batch print is included in the Information Handout. The user must have the following options in viewing and printing the individual truck records:

    7.1. Scroll and print continuously all records for the selected class(es); user has capability to stop/resume scrolling or terminate program.
    7.2. Scroll each record one at a time; user has capability to:

        7.2.1. Print displayed record and display next record.
        7.2.2. Display next record.
        7.2.3. Terminate program.

8. ASCII export utility. The ASCII export utility application must allow the user to generate specified ASCII files using downloaded files. The file formats for these files are included in the Information Handout. The user must have the choice of:

    8.1. From vehicle class/count summary file:

        8.1.1. ASCII classification file.

8.1.2. ASCII speed file.

8.2. From individual truck record file:

8.2.1. ASCII truck record file.

86-5.03A(4)(a)(5)(iii) Reports

The reports must include all information contained in and formatted similar to the sample reports included in the Information Handout. The reports must be printed in condensed print when necessary to fit on 8 1/2 x 11 inch sheets.

The System Program must provide for the generation of reports in the following two modes:

1. Manual mode: For daily reports the System Program must provide for user selection of the date and the specific report. For monthly reports, the System Program must provide for user selection of the month/year and the specific report. The selected monthly report must include the data from all downloaded daily data files resident with the System Program on a directory or subdirectory of the host computer's storage medium. The System Program must also provide for user selection of the lane or lanes to be covered by the specific report (not applicable to the "Distribution of Class and Speed Counts by Lane", the "Distribution of Vehicle Counts by Hour of Day by Lane" and the "Distribution of Truck Record Data by Lane" reports). The default must be "all lanes." The printed report must note which lanes are represented.
2. Automatic mode: The System Program must provide for user designation of one or a combination of the specific daily reports for automatic processing. User selection of lane or lanes is not required (the "all lanes" default may be used). User selection of vehicle status for the 18 kip ESAL report is not required (the "all" weighed vehicles default may be used). Such designations must be affected by means of either:

    2.1. An ASCII text file, which can be revised with text editor or word processor, supplied with a "Sample" designation; or,
    2.2. A menu selection which must provide for user input of designation.

Upon selection of automatic mode of report preparation by the user, the System Program must send to the printer all pre-designated reports for all downloaded daily data files resident with the System Program on a directory or subdirectory of the host computer's storage medium.

The designated reports must remain in effect for subsequent automatic mode sessions unless the user revises report designation.

86-5.03A(4)(a)(5)(iv) Utility and Data Files

TMG files utility. The TMG files utility must allow the user to generate ASCII files conforming to the instructions contained in Section 6 of the FHWA Traffic Monitoring Guide using downloaded files.

Regardless of the method of data manipulation and formatting used by the Central Unit, data files must conform to the following:

1. Individual daily data files must be created and stored in the storage medium of the Central Unit. Each daily data file must include data for each 00:00 hour through a 24:00 hour period and must have a file name which uniquely identifies the file as to site designation, date, and file contents (i.e. class/count summary data, individual truck record data, or both).
2. The daily data files must be created at the start of each day, data for each vehicle must be filed within one hour of the vehicle's passing through the site, and the current day's files must be accommodative to downloading at any time during the day. Data file structure must be accommodative to efficient use of storage medium space and rapid downloading via modem to the host computers.
3. The daily files containing class/count summary data and individual truck records data may be created in the storage medium of the Central Unit as two separate daily files or as one daily file. However, if one daily file is created and downloaded as such, the System Program must create two separate daily files, each with a file name which uniquely identifies it as to site, date, and whether it is a vehicle class/count summary file or an individual truck records file.

86-5.03A(4)(b) Acceptance Testing

You must demonstrate that the high speed WIM system is available for use by the Department by successfully completing the acceptance test for each lane of data collection.

Accuracy testing must be performed using one or more tests trucks deemed by the Engineer to be representative of the truck traffic through the high speed WIM system site. Each test truck must be loaded at a minimum of 90 percent of its legal operation weight. Conformance to accuracy testing will be based upon a minimum of two test truck measurements at each 5 mph increment between the typical minimum and maximum operating speeds of the truck traffic through the high speed WIM system site.

The acceptance test must consist of:

1. Continuous operation of the high speed WIM system for 72 consecutive hours. Failure of the system to record and store data meeting the requirements set forth in these special provisions for an accumulated time exceeding 3 hours during the 72 hour period will be cause for the acceptance test to be repeated.
2. Testing of the high speed WIM system application software during the above noted 72 hours period and the full working day following the 72 hour period. Failure of the software to perform any application meeting the requirements set forth in these special provisions will be cause for the acceptance test to be repeated.

Unavailability may be deemed by the Engineer as failure of the high speed WIM system to pass the acceptance test. Failure of the host computer or its peripheral equipment or of a communication line, not furnished by you, to transmit data may be considered as not rendering the high speed WIM system unavailable, provided that you demonstrate to the WIM Engineer that the failure is not caused by any of the equipment furnished by you.

86-5.03B Warranty

Furnish from the manufacturer of the system a 5-year replacement warranty against any defects or failures of the wheel scales, lead-in cables, frames and mounting hardware All other equipment specified as on-site components under "Materials" of these special provisions must include the manufacturer's or supplier's 2-year warranty.

The effective date of the warranty is the date of acceptance of the installation, and must include parts and installation costs, including traffic control if necessary, to make the repairs.

86-5.03C Materials

The high speed WIM system, at minimum, consists of the following on-site components:

1. Wheel scale or scales, scale lead-in-cable as required, frames and mounting hardware for each lane to be instrumented.
2. Two inductive loop detectors per lane.
3. Central Unit – Device that includes all the equipment and software necessary to calculate, store, and transmit to a host computer all data specified in these special provisions. The Central Unit must use a storage medium that is completely solid state, with no mechanical components, and must be a type that is not susceptible to loss of accumulated data should electrical power be interrupted.
4. A 334L controller cabinet to house the Central Unit and includes a battery backup system capable of providing uninterrupted power for operation for a minimum of one hour.
5. Axle sensors containing piezoelectric material and screen transmission cable. The embedded axle sensors must be electrically screened so as not to generate electrical noise. Sensors must be self powered, provide steady output signal over the complete active zone, and must be capable of operation throughout a temperature of -40 ºC to 80 ºC.
6. Battery powered portable personal computer (PC) adequate to connect to the Central Unit for system testing, adjustments, programming, on-site direct data downloading, and off-site downloading and testing of the high speed WIM system with software and cable to facilitate these functions.

6.1. The portable PC must have, as a minimum:
   6.1.1. A dual core 2.33 GHz processor
   6.1.2. A 14" active matrix color display
   6.1.3. A minimum of 2 gigabytes RAM
   6.1.4. A 3.5-inch floppy disk drive (internal or external) with a minimum capacity of 1.44 megabytes
   6.1.5. An internal CD/DVD±RW/DVD-RAM disk drive
   6.1.6. A 200 gigabyte or larger internal hard disk drive
   6.1.7. Internal 10/100/1000 Ethernet
   6.1.8. An internal V.92 modem.

7. All necessary interconnecting cables and miscellaneous materials required to make the high speed WIM system operational via direct connection and via phone line.
8. An application program, referred to as the "System Program" and furnished as part of the high speed WIM system. The System Program is software that provides communications between a host computer and on-site Central Unit and processes downloaded data to generate the specified reports and specified ASCII files. Although the System Program is referred to as a single software program, communications functions and data processing functions may be provided as two separate programs as long as all functional requirements are met.

   8.1. The System Program must be suitable for operating on a host computer. The host computer will be furnished by others and will consist of:

      8.1.1. Basic desktop personal computer using Windows XP
      8.1.2. Networked Printers
      8.1.3. V.92 compliant modem.

86-5.03D Construction

Provide notification to the Engineer 2 weeks before beginning installation of the scale frames and scales.

A representative of the WIM manufacturer must be on site during the installation of the WIM scale frames and scales. The layout of scale frames are to be drawn and sawcut under supervision of the WIM manufacturer representative.

Proposals for modifications to the high speed WIM system equipment must be submitted to the Engineer for coordination with a WIM Engineer. Allow 2 weeks for the Engineer's review. Do not proceed with work involving the proposed modification without the Engineer's written approval.

Concrete pavement must be ground, straight-edged and brought into tolerance before sawcutting for removal of concrete for installation of WIM scale frames.

The outlines of excavations in the pavement for WIM scale frames must be cut on a neat line to a minimum depth of 2 inches with a power-driven concrete cutting saw before any material is removed.

If scale frames and weigh pads are not installed by the end of the work period, open excavations must be backfilled with temporary asphalt concrete to conform to the grade of the adjacent concrete pavement prior to opening lanes to public traffic.

86-5.03E Payment

Not Used

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DIVISION X MATERIALS
87 MATERIALS—GENERAL

Replace section 87-2 with:

87-2 AGGREGATE

87-2.01 GENERAL

87-2.01A Summary

Section 87-2 includes specifications for furnishing aggregate.

87-2.01B Definitions

stockpile lot: Stockpile or portion of a stockpile of steel slag aggregate used.

87-2.01C Submittals

Submit a certificate of compliance for:

1. Each stockpile lot
2. Steel slag

87-2.02 MATERIALS

87-2.02A General

Do not use air-cooled iron blast furnace slag to produce aggregate for:

1. Structure backfill material
2. Pervious backfill material
3. Permeable material
4. Reinforced or prestressed PCC component or structure
5. Nonreinforced PCC component or structure for which a Class 1 surface finish under section 51-1.03F(3) is required

Do not use aggregate produced from slag resulting from a steel-making process except in:

1. Imported borrow
2. AS
3. Class 2 AB
4. HMA

Steel slag used to produce aggregate for AS and Class 2 AB must be crushed such that 100 percent of the material will pass a 3/4-inch sieve and then control aged for at least 3 months under conditions that will maintain all portions of the stockpiled material at a moisture content in excess of 6 percent of the dry weight of the aggregate.

For steel slag aggregate, provide separate stockpiles for controlled aging of the slag. An individual stockpile must not contain less than 10,000 tons or more than 50,000 tons of slag. The material in each individual stockpile must be assigned a unique lot number, and each stockpile must be identified with a permanent system of signs. Maintain a permanent record of:

1. Dates for:
   1.1. Completion of stockpile
   1.2. Start of controlled aging
   1.3. Completion of controlled aging
   1.4. Making of tests
2. Test results

For each stockplie of steel slag aggregate, moisture tests must be made at least once each week. The time covered by tests that show a moisture content of 6 percent or less is not included in the aging time.

Notify METS and the Engineer upon completion of each stockpile and the start of controlled aging and upon completion of controlled aging. Do not add aggregate to a stockpile unless a new aging period is started.

Steel slag used for imported borrow must be weathered for at least 3 months.

Each delivery of aggregate containing steel slag for AS or Class 2 AB must include a delivery tag for each load. The tag must identify the lot by the stockpile number, slag aging location, and stockpile completion and controlled aging start date.

You may blend air-cooled iron blast furnace slag or natural aggregate in proper combinations with steel slag aggregate to produce the specified gradings.

California Test 202 is modified by California Test 105 whenever the difference in sp gr between the coarse and fine portions of the aggregate or between the blends of different aggregates is 0.2 or more.

For slag used as aggregate in HMA, the Kc factor requirements in California Test 303 do not apply.

If steel slag aggregates are used to produce HMA, no other aggregates may be used in the mixture except that up to 50 percent of the material passing the no. 4 sieve may consist of iron blast furnace slag aggregates, natural aggregates, or a combination of these. If iron blast furnace aggregates, natural aggregates, or a combination of these are used in the mixture, each aggregate type must be fed to the drier at a uniform rate. Maintain the feed rate of each aggregate type within 10 percent of the amount set. Provide adequate means for controlling and checking the feeder accuracy.

Store steel slag aggregate separately from iron blast furnace slag aggregate. Store each slag aggregate type separately from natural aggregate.

For HMA produced from steel slag aggregates, iron blast furnace slag aggregates, natural aggregates, or any combination of these, the same aggregate must be used throughout any one layer. Once an aggregate type is selected, do not change it without authorization.

Aggregate containing slag must comply with the applicable quality requirements for the bid items in which the aggregate is used.

87-2.03 CONSTRUCTION

Do not place aggregate produced from slag within 1 foot of a non–cathodically protected pipe or structure unless the aggregate is incorporated in concrete pavement, in HMA, or in treated base.

Do not place slag aggregate used for embankments within 18 inches of finished slope lines measured normal to the plane of the slope.

Whenever slag aggregate is used for imported borrow, place a layer of topsoil at least 24 inches thick after compaction over the slag aggregate in highway planting areas.

87-2.04 PAYMENT

The Department reduces the payment quantity of HMA if:

1. Steel slag aggregates are used to produce HMA
2. The sp gr of a compacted stabilometer test specimen is in excess of 2.40

The Department prepares the stabilometer test specimen under California Test 304 and determines the sp gr of the specimen under Method C of California Test 308.

The Department determines the HMA payment quantity by multiplying the quantity of HMA placed in the work by 2.40 and dividing the result by the sp gr of the compacted stabilometer test specimen. The Department applies this quantity reduction as often as necessary to ensure accurate results.

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90 CONCRETE

Add to section 90-2.02B:

You may use rice hull ash as an SCM. Rice hull ash must comply with AASHTO M 321 and the chemical and physical requirements shown in the following tables:

Chemical property	Requirement (percent)
Silicon dioxide (SiO_2)[a]	90 min
Loss on ignition	5.0 max
Total alkalies as Na_2O equivalent	3.0 max

Physical property	Requirement
Particle size distribution Less than 45 microns Less than 10 microns	 95 percent 50 percent
Strength activity index with portland cement[b] 7 days 28 days	 95 percent (min percent of control) 110 percent (min percent of control)
Expansion at 16 days when testing project materials under ASTM C 1567[c]	0.10 percent max
Surface area when testing by nitrogen adsorption under ASTM D 5604	40.0 m^2/g min

[a]SiO_2 in crystalline form must not exceed 1.0 percent.
[b]When tested under AASHTO M 307 for strength activity testing of silica fume.
[c]In the test mix, Type II or V portland cement must be replaced with at least 12 percent rice hull ash by weight.

For the purpose of calculating the equations for the cementitious material specifications, consider rice hull ash to be represented by the variable *UF*.

REVISED STANDARD SPECIFICATIONS APPLICABLE TO THE 2010 EDITION OF THE STANDARD SPECIFICATIONS

REVISED STANDARD SPECIFICATIONS DATED 04-19-13

Revised standard specifications are under headings that correspond with the main-section headings of the *Standard Specifications*. A main-section heading is a heading shown in the table of contents of the *Standard Specifications*. A date under a main-section heading is the date of the latest revision to the section.

Each revision to the *Standard Specifications* begins with a revision clause that describes a revision to the *Standard Specifications* or introduces a revision to the *Standard Specifications*. For a revision clause that describes a revision, the date on the right above the clause is the publication date of the revision. For a revision clause that introduces a revision, the date on the right above a revised term, phrase, clause, paragraph, or section is the publication date of the revised term, phrase, clause, paragraph, or section. For a multiple-paragraph or multiple-section revision, the date on the right above a paragraph or section is the publication date of the paragraphs or sections that follow.

Any paragraph added or deleted by a revision clause does not change the paragraph numbering of the *Standard Specifications* for any other reference to a paragraph of the *Standard Specifications*.

DIVISION I GENERAL PROVISIONS

1 GENERAL

04-19-13

Replace "current" in the 2nd paragraph of section 1-1.05 with:

04-20-12

most recent

Add to the 4th paragraph of section 1-1.05:

04-20-12

Any reference directly to a revised standard specification section is for convenience only. Lack of a direct reference to a revised standard specification section does not indicate a revised standard specification for the section does not exist.

Add to the 1st table in section 1-1.06:

04-19-13

LCS	Department's lane closure system
POC	pedestrian overcrossing
QSD	qualified SWPPP developer
QSP	qualified SWPPP practitioner
TRO	time-related overhead
WPC	water pollution control

06-20-12

Delete the abbreviation and its meaning for *UDBE* in the 1st table of section 1-1.06.

10-19-12

Delete "Contract completion date" and its definition in section 1-1.07B.

10-19-12

Delete "critical delay" and its definition in section 1-1.07B.

Replace "day" and its definition in section 1-1.07B with:

10-19-12

day: 24 consecutive hours running from midnight to midnight; calendar day.

1. **business day:** Day on the calendar except a Saturday and a holiday.
2. **working day:** Time measure unit for work progress. A working day is any 24-consecutive-hour period except:
   - 2.1. Saturday and holiday.
   - 2.2. Day during which you cannot perform work on the controlling activity for at least 50 percent of the scheduled work shift with at least 50 percent of the scheduled labor and equipment due to any of the following:
     - 2.2.1. Adverse weather-related conditions.
     - 2.2.2. Maintaining traffic under the Contract.
     - 2.2.3. Suspension of a controlling activity that you and the Engineer agree benefits both parties.
     - 2.2.4. Unanticipated event not caused by either party such as:
       - 2.2.4.1. Act of God.
       - 2.2.4.2. Act of a public enemy.
       - 2.2.4.3. Epidemic.
       - 2.2.4.4. Fire.
       - 2.2.4.5. Flood.
       - 2.2.4.6. Governor-declared state of emergency.
       - 2.2.4.7. Landslide.
       - 2.2.4.8. Quarantine restriction.
     - 2.2.5. Issue involving a third party, including:
       - 2.2.5.1. Industry or area-wide labor strike.
       - 2.2.5.2. Material shortage.
       - 2.2.5.3. Freight embargo.
       - 2.2.5.4. Jurisdictional requirement of a law enforcement agency.
       - 2.2.5.5. Workforce labor dispute of a utility or nonhighway facility owner resulting in a nonhighway facility rearrangement not described and not solely for the Contractor's convenience. Rearrangement of a nonhighway facility includes installation, relocation, alteration, or removal of the facility.
   - 2.3. Day during a concurrent delay.
3. **original working days:**
   - 3.1. Working days to complete the work shown on the *Notice to Bidders* for a non–cost plus time based bid.
   - 3.2. Working days bid to complete the work for a cost plus time based bid.

Where working days is specified without the modifier "original" in the context of the number of working days to complete the work, interpret the number as the number of original working days as adjusted by any time adjustment.

Replace "Contract" in the definition of "early completion time" in section 1-1.07B with:

10-19-12

work

Replace "excusable delay" and its definition in section 1-1.07B with:

10-19-12

delay: Event that extends the completion of an activity.

1. **excusable delay:** Delay caused by the Department and not reasonably foreseeable when the work began such as:
   1.1. Change in the work
   1.2. Department action that is not part of the Contract
   1.3. Presence of an underground utility main not described in the Contract or in a location substantially different from that specified
   1.4. Described facility rearrangement not rearranged as described, by the utility owner by the date specified, unless the rearrangement is solely for the Contractor's convenience
   1.5. Department's failure to obtain timely access to the right-of-way
   1.6. Department's failure to review a submittal or provide notification in the time specified
2. **critical delay:** Excusable delay that extends the scheduled completion date
3. **concurrent delay:** Occurrence of at least 2 of the following events in the same period of time, either partially or entirely:
   3.1. Critical delay
   3.2. Delay to a controlling activity caused by you
   3.3. Non–working day

Replace "project" in the definition of "scheduled completion date" in section 1-1.07B with:

10-19-12

work

Add to section 1-1.07B:

10-19-12

Contract time: Number of original working days as adjusted by any time adjustment.

06-20-12

Disadvantaged Business Enterprise: Disadvantaged Business Enterprise as defined in 49 CFR 26.5.

Replace "PO BOX 911" in the District 3 mailing address in the table in section 1-1.08 with:

04-20-12

703 B ST

Add to the table in section 1-1.11:

01-20-12

Office Engineer–All Projects Currently Advertised	http://www.dot.ca.gov/hq/esc/oe/weekly_ads/all_advertised.php	--	--

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2 BIDDING

10-19-12

Replace the 3rd paragraph of section 2-1.06B with:

01-20-12

If an *Information Handout* or cross sections are available:

1. You may view them at the Contract Plans and Special Provisions link at the Office Engineer–All Projects Currently Advertised Web site
2. For an informal-bid contract, you may obtain them at the Bidders' Exchange street address

01-20-12

Add a paragraph break between the 1st and 2nd sentences of the 5th paragraph of section 2-1.06B.

Add between "and" and "are" in item 2 in the list in the 7th paragraph of section 2-1.06B:

04-20-12

they

06-20-12

Delete "Underutilized" in "Underutilized Disadvantaged Business Enterprises" in the heading of section 2-1.12B.

06-20-12

Delete *U* in *UDBE* at each occurrence in section 2-1.12B.

Replace the 2nd paragraph of section 2-1.12B(1) with:

06-20-12

To ensure equal participation of DBEs provided in 49 CFR 26.5, the Department shows a goal for DBEs.

06-20-12

Delete the 3rd paragraph of section 2-1.12B(1):

Replace the 7th paragraph of section 2-1.12B(1) with:

06-20-12

All DBE participation will count toward the Department's federally-mandated statewide overall DBE goal.

Replace "offered" at the end of the 2nd sentence of item 7 in the list of 2nd paragraph of section 2-1.12B(3) with:

06-20-12

provided

01-20-12

Delete the 2nd paragraph of section 2-1.33A.

Replace the 3rd paragraph of section 2-1.33A with:

01-20-12

Except for each subcontracted bid item number and corresponding percentage and proof of each required SSPC QP certification, do not fax submittals.

Add to section 2-1.33C:

10-19-12

On the *Subcontractor List*, you must either submit each subcontracted bid item number and corresponding percentage with your bid or fax these numbers and percentages to (916) 227-6282 within 24 hours after bid opening. Failure to do so results in a nonresponsive bid.

Replace the paragraph in section 2-1.35 with:

01-20-12

Submit proof of each required SSPC QP certification with your bid or fax it to (916) 227-6282 no later than 4:00 p.m. on the 2nd business day after bid opening. Failure to do so results in a nonresponsive bid.

^^

3 CONTRACT AWARD AND EXECUTION

10-19-12

Add to the end of section 3-1.04:

10-19-12

You may request to extend the award period by faxing a request to (916) 227-6282 before 4:00 p.m. on the last day of the award period. If you do not make this request, after the specified award period:

1. Your bid becomes invalid
2. You are not eligible for the award of the contract

Replace the paragraph in section 3-1.11 with:

10-19-12

Complete and deliver to the Office Engineer a *Payee Data Record* when requested by the Department.

Replace section 3-1.13 with:

07-27-12

3-1.13 FORM FHWA-1273

For a federal-aid contract, form FHWA-1273 is included with the Contract form in the documents sent to the successful bidder for execution. Comply with its provisions. Interpret the training and promotion section as specified in section 7-1.11A.

Add to item 1 in the list in the 2nd paragraph of section 3-1.18:

07-27-12

, including the attached form FHWA-1273

10-19-12

Delete item 4 of the 2nd paragraph of section 3-1.18.

^^

5 CONTROL OF WORK

10-19-12

Add between "million" and ", professionally" in the 3rd paragraph of section 5-1.09A:

10-19-12

and 100 or more working days

Add to the list in the 4th paragraph of section 5-1.09A:

10-19-12

9. Considering discussing with and involving all stakeholders in evaluating potential VECPs

Add to the end of item 1.1 in the list in the 7th paragraph of section 5-1.09A:

10-19-12

, including VECPs

Replace the 1st paragraph of section 5-1.09C with:

10-19-12

For a contract with a total bid over $10 million and 100 or more working days, training in partnering skills development is required.

10-19-12

Delete the 2nd paragraph of section 5-1.09C.

Replace "at least 2 representatives" in the 5th paragraph of section 5-1.09C with:

10-19-12

field supervisory personnel

Replace the 1st and 2nd sentences in the 7th paragraph of section 5-1.13B(1) with:

06-20-12

If a DBE is decertified before completing its work, the DBE must notify you in writing of the decertification date. If a business becomes a certified DBE before completing its work, the business must notify you in writing of the certification date.

Replace "90" in the last sentence of the 7th paragraph of section 5-1.13B(1) with:

06-20-12

30

Replace "Underutilized" in "Underutilized Disadvantaged Business Enterprises" in the heading of section 5-1.13B(2) with:

06-20-12

Performance of

06-20-12

Delete *U* in *UDBE* at each occurrence in section 5-1.13B(2).

Replace the 3rd paragraph of section 5-1.13B(2) with:

06-20-12

Do not terminate or substitute a listed DBE for convenience and perform the work with your own forces or obtain materials from other sources without authorization from the Department.

Replace item 6 in the list in the 4th paragraph of section 5-1.13B(2) with:

06-20-12

6. Listed DBE is ineligible to work on the project because of suspension or debarment.

Add to the list in the 4th paragraph of section 5-1.13B(2):

06-20-12

8. Listed DBE voluntarily withdraws with written notice from the Contract.
9. Listed DBE is ineligible to receive credit for the type of work required.
10. Listed DBE owner dies or becomes disabled resulting in the inability to perform the work on the Contract.
11. Department determines other documented good cause.

Add between the 4th and 5th paragraphs of section 5-1.13B(2):

07-20-12

Notify the original DBE of your intent to use other forces or material sources and provide the reasons. Provide the DBE with 5 days to respond to your notice and advise you and the Department of the reasons why the use of other forces or sources of materials should not occur. Your request to use other forces or material sources must include:

1. 1 or more of the reasons listed in the preceding paragraph
2. Notices from you to the DBE regarding the request
3. Notices from the DBE to you regarding the request

Add between "terminated" and ", you" in the 5th paragraph of section 5-1.13B(2):

07-20-12

or substituted

Replace "Contract" in item 1 in the list in the 5th paragraph of section 5-1.13C with:

10-19-12

work

Replace "Reserved" in section 5-1.20C with:

10-19-12

If the Contract includes an agreement with a railroad company, the Department makes the provisions of the agreement available in the *Information Handout* in the document titled "Railroad Relations and Insurance Requirements." Comply with the requirements in the document.

Add between the 2nd and 3rd paragraphs of section 5-1.23A:

10-19-12

Submit action and informational submittals to the Engineer.

Add to section 5-1.36C:

07-20-12

If the Contract does not include an agreement with a railroad company, do not allow personnel or equipment on railroad property.

Prevent material, equipment, and debris from falling onto railroad property.

Add between the 1st and 2nd paragraphs of section 5-1.37A:

10-19-12

Do not remove any padlock used to secure a portion of the work until the Engineer is present to replace it. Notify the Engineer at least 3 days before removing the lock.

Replace the 1st sentence of the 1st paragraph of section 5-1.39C(2) with:

10-19-12

Section 5-1.39C(2) applies if a plant establishment period of 3 years or more is shown on the *Notice to Bidders*.

Replace "working days" in the 1st paragraph of section 5-1.43E(1)(a) with:

10-19-12

original working days

^^

6 CONTROL OF MATERIALS

04-19-13

Replace section 6-2.05C with:

04-19-13

6-2.05C Steel and Iron Materials

Steel and iron materials must be melted and manufactured in the United States except:

1. Foreign pig iron and processed, pelletized, and reduced iron ore may be used in the domestic production of the steel and iron materials
2. If the total combined cost of the materials does not exceed the greater of 0.1 percent of the total bid or $2,500, materials produced outside the United States may be used if authorized

Furnish steel and iron materials to be incorporated into the work with certificates of compliance and certified mill test reports. Mill test reports must indicate where the steel and iron were melted and manufactured.

All melting and manufacturing processes for these materials, including an application of a coating, must occur in the United States. Coating includes all processes that protect or enhance the value of the material to which the coating is applied.

^^

7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

07-27-12

Replace "20 days" in the 14th paragraph of section 7-1.04 with:

09-16-11

25 days

Replace "90 days" in the 14th paragraph of section 7-1.04 with:

09-16-11

125 days

Add between the 18th and 19th paragraphs of section 7-1.04:

09-16-11

Temporary facilities that could be a hazard to public safety if improperly designed must comply with design requirements described in the Contract for those facilities or, if none are described, with standard design criteria or codes appropriate for the facility involved. Submit shop drawings and design calculations for the temporary facilities and show the standard design criteria or codes used. Shop drawings and supplemental calculations must be sealed and signed by an engineer who is registered as a civil engineer in the State.

Replace the 2nd paragraph of section 7-1.11A with:

07-27-12

A copy of form FHWA-1273 is included in section 7-1.11B. The training and promotion section of section II refers to training provisions as if they were included in the special provisions. The Department specifies the provisions in section 7-1.11D of the *Standard Specifications*. If a number of trainees or apprentices is required, the Department shows the number on the *Notice to Bidders*. Interpret each FHWA-1273 clause shown in the following table as having the same meaning as the corresponding Department clause:

FHWA-1273 Nondiscrimination Clauses

FHWA-1273 section	FHWA-1273 clause	Department clause
Training and Promotion	In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.	If section 7-1.11D applies, section 7-1.11D supersedes this subparagraph.
Records and Reports	If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.	If the Contract requires on-the-job training, collect and report training data.

Replace the form in section 7-1.11B with:

07-20-12

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are

applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;
(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the

department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

* * * * *

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

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8 PROSECUTION AND PROGRESS

10-19-12

Replace "working days" in the 1st paragraph of section 8-1.02B(1) with:

10-19-12

original working days

Replace "working days" at each occurrence in the 1st paragraph of section 8-1.02C(1) with:

10-19-12

original working days

04-20-12

Delete the 4th paragraph of section 8-1.02C(1).

Replace "Contract" in the 9th paragraph of section 8-1.02C(1) with:

10-19-12

work

Replace the 1st paragraph of section 8-1.02C(3)(a) with:

04-20-12

Submit a description of your proposed schedule software for authorization.

04-20-12

Delete the last paragraph of section 8-1.02C(3)(a).

Replace section 8-1.02C(3)(b) with:

10-19-12

8-1.02C(3)(b) Reserved

04-20-12

Delete the 3rd paragraph of section 8-1.02C(5).

Replace "Contract" in the last paragraph of section 8-1.02C(5) with:

10-19-12

original

Replace "working days" in the 1st paragraph of section 8-1.02D(1) with:

10-19-12

original working days

Replace "8-1.02D(1)" in the 2nd paragraph of section 8-1.02D(1) with:

01-20-12

8-1.02C(1)

Replace "Contract" in the 3rd paragraph of section 8-1.02D(2) with:

10-19-12

work

Replace "Contract" in item 9 in the list in the 4th paragraph of section 8-1.02D(4) with:

10-19-12

work

Replace "Contract completion" in the 4th paragraph of section 8-1.02D(6) with:

10-19-12

work completion

Replace "Contract working days" in the 4th paragraph of section 8-1.02D(6) with:

10-19-12

original working days

04-20-12

Delete items 1.3 and 1.4 in the list in the 1st paragraph of section 8-1.02D(10).

Replace the last paragraph of section 8-1.04B with:

10-19-12

The Department does not adjust time for starting before receiving notice of Contract approval.

Replace the 1st paragraph of section 8-1.05 with:

10-19-12

Contract time starts on the last day specified to start job site activities in section 8-1.04 or on the day you start job site activities, whichever occurs first.

Replace the 2nd paragraph of section 8-1.05 with:

10-19-12

Complete the work within the Contract time.

10-19-12

Delete "unless the Contract is suspended for reasons unrelated to your performance" in the 4th paragraph of section 8-1.05.

Replace the headings and paragraphs in section 8-1.06 with:

10-19-12

The Engineer may suspend work wholly or in part due to conditions unsuitable for work progress. Provide for public safety and a smooth and unobstructed passageway through the work zone during the suspension as specified under sections 7-1.03 and 7-1.04. Providing the passageway is force account work. The Department makes a time adjustment for the suspension due to a critical delay.

The Engineer may suspend work wholly or in part due to your failure to (1) fulfill the Engineer's orders, (2) fulfill a Contract part, or (3) perform weather-dependent work when conditions are favorable so that weather-related unsuitable conditions are avoided or do not occur. The Department may provide for a

smooth and unobstructed passageway through the work during the suspension and deduct the cost from payments. The Department does not make a time adjustment for the suspension.

Upon the Engineer's order of suspension, suspend work immediately. Resume work when ordered.

Replace the 1st sentence in the 1st paragraph of section 8-1.07B with:

10-19-12

For a critical delay, the Department may make a time adjustment.

Add to the end of section 8-1.07C:

10-19-12

The Department does not make a payment adjustment for overhead incurred during non–working days that extend the Contract into an additional construction season.

Replace the 1st paragraph of section 8-1.07C with:

10-19-12

For an excusable delay that affects your costs, the Department may make a payment adjustment.

Replace "8-1.08B and 8-1.08C" in the 1st paragraph of section 8-1.10A with:

08-05-11

8-1.10B and 8-1.10C

Replace section 8-1.10D with:

10-19-12

8-1.10D Reserved

^^

9 PAYMENT

01-18-13

Replace item 1 in the 3rd paragraph of section 9-1.03 with:

01-18-13

1. Full compensation for all work involved in each bid item shown on the Bid Item List by the unit of measure shown for that bid item

Replace "in" in the 3rd paragraph of section 9-1.04A with:

10-19-12

for

Add to the end of section 9-1.04A:

10-19-12

For nonsubcontracted work paid by force account for a contract with a TRO bid item, the markups are those shown in the following table instead of those specified in sections 9-1.04B–D:

Cost	Percent markup
Labor	30
Materials	10
Equipment rental	10

04-20-12

Delete ", Huntington Beach," in the 3rd paragraph of section 9-1.07A.

Replace the formula in section 9-1.07B(2) with:

04-20-12

$Qh = HMATT \times Xa$

Replace "weight of dry aggregate" in the definition of the variable *Xa* in section 9-1.07B(2) with:

04-20-12

total weight of HMA

Replace the formula in section 9-1.07B(3) with:

04-20-12

$Qrh = RHMATT \times 0.80 \times Xarb$

Replace "weight of dry aggregate" in the definition of the variable *Xarb* in section 9-1.07B(3) with:

04-20-12

total weight of rubberized HMA

Replace the heading of section 9-1.07B(4) with:

04-20-12

Hot Mix Asphalt with Modified Asphalt Binder

Add between "in" and "modified" in the introductory clause of section 9-1.07B(4):

04-20-12

HMA with

Replace the formula in section 9-1.07B(4) with:

04-20-12

$Qmh = MHMATT \times [(100 - Xam) / 100] \times Xmab$

Replace "weight of dry aggregate" in the definition of the variable *Xmab* in section 9-1.07B(4) with:

04-20-12

total weight of HMA

Replace the formula in section 9-1.07B(5) with:

04-20-12

$Qrap = HMATT \times Xaa$

Replace "weight of dry aggregate" in the definitions of the variables *Xaa* and *Xta* in section 9-1.07B(5) with:

04-20-12

total weight of HMA

Add after the variable definitions in section 9-1.07B(9):

04-20-12

The quantity of extender oil is included in the quantity of asphalt.

Replace the headings and paragraphs in section 9-1.11 with:

10-19-12

9-1.11A General

Section 9-1.11 applies if a bid item for time-related overhead is included in the Contract. If a bid item for time-related overhead is included, you must exclude the time-related overhead from every other bid item price.

9-1.11B Payment Quantity

The TRO quantity does not include the number of working days to complete plant establishment work.

For a contract with a TRO lump sum quantity on the Bid Item List, the Department pays you based on the following conversions:

1. LS unit of measure is replaced with WDAY
2. Lump sum quantity is replaced with the number of working days bid
3. Lump sum unit price is replaced with the item total divided by the number of working days bid

9-1.11C Payment Inclusions

Payment for the TRO bid item includes payment for time-related field- and home-office overhead for the time required to complete the work.

The field office overhead includes time-related expenses associated with the normal and recurring construction activities not directly attributed to the work, including:

1. Salaries, benefits, and equipment costs of:
   1.1. Project managers
   1.2. General superintendents
   1.3. Field office managers
   1.4. Field office staff assigned to the project
2. Rent
3. Utilities
4. Maintenance
5. Security
6. Supplies
7. Office equipment costs for the project's field office

The home-office overhead includes the fixed general and administrative expenses for operating your business, including:

1. General administration
2. Insurance
3. Personnel and subcontract administration
4. Purchasing
5. Accounting
6. Project engineering and estimating

Payment for the TRO bid item does not include payment for:

1. The home-office overhead expenses specifically related to:
   1.1. Your other contracts or other businesses
   1.2. Equipment coordination
   1.3. Material deliveries
   1.4. Consultant and legal fees
2. Non-time-related costs and expenses such as mobilization, licenses, permits, and other charges incurred once during the Contract
3. Additional overhead involved in incentive/disincentive provisions to satisfy an internal milestone or multiple calendar requirements
4. Additional overhead involved in performing additional work that is not a controlling activity
5. Overhead costs incurred by your subcontractors of any tier or suppliers

9-1.11D Payment Schedule

For progress payments, the total work completed for the TRO bid item is the number of working days shown for the pay period on the *Weekly Statement of Working Days*.

For progress payments, the Department pays a unit price equal to the lesser of the following amounts:

1. Price per working day as bid or as converted under section 9-1.11B.
2. 20 percent of the total bid divided by the number of original working days

For a contract without plant establishment work, the Department pays you the balance due of the TRO item total as specified in section 9-1.17B.

For a contract with plant establishment work, the Department pays you the balance due of the TRO item total in the 1st progress payment after all non–plant establishment work is completed.

9-1.11E Payment Adjustments

The 3rd paragraph of section 9-1.17C does not apply.

The Department does not adjust the unit price for an increase or decrease in the TRO quantity except as specified in section 9-1.11E.

Section 9-1.17D(2)(b) does not apply except as specified for the audit report below.

If the TRO bid item quantity exceeds 149 percent of the quantity shown on the Bid Item List or as converted under section 9-1.11B, the Engineer may adjust or you may request an adjustment of the unit price for the excess quantity. For the adjustment, submit an audit report within 60 days of the Engineer's request. The report must be prepared as specified for an audit report for an overhead claim in section 9-1.17D(2)(b).

Within 20 days of the Engineer's request, make your financial records available for an audit by the State for the purpose of verifying the actual rate of TRO described in your audit. The actual rate of TRO described is subject to the Engineer's authorization.

The Department pays the authorized actual rate for TRO in excess of 149 percent of the quantity shown on the Bid Item List or as converted under section 9-1.11B.

The Department pays for 1/2 the cost of the report; the Contractor pays for the other 1/2. The cost is determined under section 9-1.05.

10-19-12

Delete "revised Contract" in item 1 of the 1st paragraph of section 9-1.16E(2).

Replace "2014" in the 1st paragraph of section 9-1.16F with:

10-19-12

2020

Replace the 2nd paragraph of section 9-1.17C with:

10-19-12

Submit either a written acceptance of the proposed final estimate or a claim statement postmarked or hand delivered before the 31st day after receiving the proposed final estimate.

Add between "the" and "final estimate" in the 1st sentence in the 3rd paragraph of section 9-1.17C:

10-19-12

proposed

^^

DIVISION II GENERAL CONSTRUCTION

10 GENERAL

04-19-13

Replace the headings and paragraphs in section 10 with:

04-19-13

10-1 GENERAL

10-1.01 GENERAL

Section 10 includes general specifications for general construction work.

10-1.02 WORK SEQUENCING

Before obliterating any traffic stripes, pavement markings, and pavement markers to be replaced at the same location, reference the stripes, markings, and markers. Include limits and transitions with control points to reestablish the new stripes, markings, and markers.

10-1.03 TIME CONSTRAINTS

Reserved

10-1.04 TRAINING AND MEETINGS

Training and meetings are held at times and locations you and the Engineer agree to.

10-1.05–10-1.10 RESERVED

10-2 SUSTAINABLE DESIGN REQUIREMENTS

10-2.01 GENERAL

10-2.01A General

Reserved

10-2.01B–10-2.01H Reserved

10-2.02 *CALGREEN* TIER 1

10-2.02A–10-2.02H Reserved

10-2.03 LEED

10-2.03A–10-2.03H Reserved

10-3–10-5 RESERVED

10-6 JOB SITE WATER CONTROL

10-6.01 GENERAL

Section 10-6 includes specifications for controlling water to provide a dry working area at the job site.

10-6.02 WATER-FILLED COFFERDAM

Reserved

10-6.03–10-6.10 RESERVED

10-7–10-20 RESERVED

^^

12 TEMPORARY TRAFFIC CONTROL

04-19-13

Replace the 1st paragraph of section 12-3.01A(4) with:

10-19-12

Category 2 temporary traffic control devices must be on FHWA's list of acceptable, crashworthy Category 2 hardware for work zones. This list is available on FHWA's Safety Program Web site.

Replace "project" in the 4th paragraph of section 12-3.02C with:

10-19-12

work

Add after "Display" in item 4 in the list in the 2nd paragraph of section 12-3.03B:

04-19-13

or Alternating Diamond

Replace "project" in the 3rd paragraph of section 12-3.07C with:

10-19-12

work

Replace the 3rd through 5th paragraphs of section 12-4.03 with:

04-19-13

Submit closure schedules using the Department's Internet-based LCS program to show the locations and times of the proposed closures.

The Department provides LCS training. Request LCS training at least 30 days before submitting the 1st lane closure request. The Department provides the training within 15 days after your request. The training may be web based.

Except for web-based training, the training is held at a time and location you and the Engineer agree to.

For web-based training, the Engineer provides you the website address to access the training.

Within 5 business days after completion of the training, the Department provides LCS accounts and user identifications to your assigned representatives.

Each representative must maintain a unique password and current user information in the LCS.

You will be notified through LCS of unauthorized closures or closures that require coordination with other parties as a condition for authorization.

Submit closure schedule amendments using LCS, including adding additional closures, by noon at least 3 business days before a planned closure. Authorization of amendments will be at the discretion of the Engineer.

Cancel closure requests using LCS at least 48 hours before the time of the closure.

Add between the 7th and 8th paragraphs of section 12-4.03:

10-19-12

The contingency plan must identify the operations, equipment, processes, and materials that may fail and delay a reopening of a closure to traffic. List the additional or alternate equipment, materials, or workers necessary to ensure continuing operations and on-time opening of closures whenever a problem occurs. If the additional or alternate equipment, materials, or workers are not on site, specify their location, the method for mobilizing these items, and the required time to complete mobilization.

Based on the Engineer's review, additional materials, equipment, workers, or time to complete operations from that specified in the contingency plan may be required.

Provide a general time-scaled logic diagram displaying the major activities and sequence of planned operations that comply with the requirements of section 12-4.03. For each operation, identify the critical event when the contingency plan will be activated.

Submit any revisions to the contingency plan for an operation at least 3 business days before starting that operation. Do not close any lanes until the contingency plan has been authorized.

The 5th paragraph of section 5-1.23B(1) does not apply to reviewing contingency plans.

Replace section 12-7 with:

09-16-11

12-7 RESERVED

^^

13 WATER POLLUTION CONTROL

04-19-13

04-19-13

Delete item 3 in the list in the 4th paragraph of section 13-1.01A.

Add to section 13-1.01A:

01-20-12

Comply with the Department's general permit issued by the State Water Resources Control Board for *Order No. 99-06-DWQ, NPDES No. CAS000003, National Pollutant Discharge Elimination System (NPDES) Permit, Statewide Storm Water Permit and Waste Discharge Requirements (WDRs) for the State of California, Department of Transportation (Caltrans).* The Department's general permit governs stormwater and nonstormwater discharges from the Department's properties, facilities, and activities. The Department's general permit may be viewed at the Web site for the State Water Resources Control Board, Storm Water Program, Caltrans General Permit.

Add to the list in the 1st paragraph of section 13-1.01D(3)(b):

10-21-11

3. Have completed SWRCB approved QSD training and passed the QSD exam

Add to the list in the 2nd paragraph of section 13-1.01D(3)(b):

10-21-11

3. Have completed SWRCB approved QSP training and passed the QSP exam

Replace "NEL violation" in item 3.6.2 in the list in the 1st paragraph of section 13-1.01D(3)(c) with:

04-19-13

receiving water monitoring trigger

Replace the 1st paragraph in section 13-2.01B with:

04-19-13

Within 7 days after Contract approval, submit 2 copies of your WPCP for review. Allow 5 business days for review.

After the Engineer authorizes the WPCP, submit an electronic copy and 3 printed copies of the authorized WPCP.

If the RWQCB requires review of the authorized WPCP, the Engineer submits the authorized WPCP to the RWQCB for its review and comment. If the Engineer orders changes to the WPCP based on the RWQCB's comments, amend the WPCP within 3 business days.

Replace the 1st paragraph in section 13-3.01B(2)(a) with:

04-19-13

Within 15 days of Contract approval, submit 3 copies of your SWPPP for review. The Engineer provides comments and specifies the date when the review stopped if revisions are required. Change and resubmit a revised SWPPP within 15 days of receiving the Engineer's comments. The Department's review resumes when a complete SWPPP has been resubmitted.

When the Engineer authorizes the SWPPP, submit an electronic copy and 4 printed copies of the authorized SWPPP.

If the RWQCB requires review of the authorized SWPPP, the Engineer submits the authorized SWPPP to the RWQCB for its review and comment. If the Engineer requests changes to the SWPPP based on the RWQCB's comments, amend the SWPPP within 10 days.

Replace "NELs" in item 3.1 in the 3rd paragraph of section 13-3.01B(2)(a) with:

04-19-13

receiving water monitoring triggers

Replace section 13-3.01B(6)(c) with:

04-19-13

13-3.01B(6)(c) Receiving Water Monitoring Trigger Report

Whenever a receiving water monitoring trigger is exceeded, notify the Engineer and submit a receiving water monitoring trigger report within 48 hours after conclusion of a storm event. The report must include:

1. Field sampling results and inspections, including:
   1.1. Analytical methods, reporting units, and detection limits
   1.2. Date, location, time of sampling, visual observation and measurements
   1.3. Quantity of precipitation from the storm event
2. Description of BMPs and corrective actions

Replace "NEL" in the 6th paragraph of section 13-3.01C(1) with:

04-19-13

receiving water monitoring trigger

Replace section 13-3.01C(3) with:

04-19-13

13-3.01C(3) Receiving Water Monitoring Trigger

For a risk level 3 project, receiving water monitoring triggers must comply with the values shown in the following table:

Receiving Water Monitoring Trigger

Parameter	Test method	Detection limit (min)	Unit	Value
pH	Field test with calibrated portable instrument	0.2	pH	Lower limit = 6.0 Upper limit = 9.0
Turbidity	Field test with calibrated portable instrument	1	NTU	500 NTU max

The storm event daily average for storms up to the 5-year, 24-hour storm must not exceed the receiving water monitoring trigger for turbidity.

The daily average sampling results must not exceed the receiving water monitoring trigger for pH.

04-19-13

Delete "and NELs are violated" in the 3rd paragraph of section 13-3.03C.

Replace "working days" at each occurrence in section 13-3.04 with.

10-19-12

original working days

04-19-13

Delete the 1st sentence in the 2nd paragraph of section 13-4.03C(3).

Add between the 2nd and 3rd paragraphs of section 13-4.03C(3):

04-19-13

Manage stockpiles by implementing water pollution control practices on:

1. Active stockpiles before a forecasted storm event
2. Inactive stockpiles according to the WPCP or SWPPP schedule

Replace the paragraph in section 13-4.04 with:

04-20-12

Not Used

10-19-12

Delete "or stockpile" in the 3rd paragraph of section 13-5.02F.

Replace section 13-5.03F with:

04-20-12

13-5.03F Reserved

10-19-12

Delete "or stockpile" in item 1 in the list in the 1st paragraph of section 13-5.03K.

10-19-12

Delete the 3rd paragraph of section 13-5.03K.

Replace the 2nd sentence in the 1st paragraph of section 13-9.01A with:

10-19-12

You may use any of the following systems for temporary concrete washout:

1. Temporary concrete washout facility
2. Portable temporary concrete washout
3. Temporary concrete washout bin

Replace the 2nd paragraph of section 13-9.01B with:

10-19-12

Retain and submit an informational submittal for records of disposed concrete waste.

10-19-12

Delete the 4th paragraph of section 13-9.01B.

10-19-12

Delete "if authorized" in the 1st sentence in the 1st paragraph of section 13-9.02A.

Replace "at least 3-inch" in the 3rd sentence in the 1st paragraph of section 13-9.02A with:

10-19-12

6-inch

^^

15 EXISTING FACILITIES

04-19-13

Replace the 4th paragraph of section 15-2.10B with:

01-18-13

Instead of using new materials similar in character to those in the existing structure, you may use raising devices to adjust a manhole to grade. Before starting paving work, measure and fabricate raising devices. Raising devices must:

1. Comply with the specifications for section 75 except that galvanizing is not required
2 Have a shape and size that matches the existing frame
3. Be match marked by painting identification numbers on the device and corresponding structure
4. Result in an installation that is equal to or better than the existing one in stability, support, and nonrocking characteristics

5. Be fastened securely to the existing frame without projections above the surface of the road or into the clear opening

Add to the end of section 15-4.01A(2):

04-19-13

Allow 20 days for review of the bridge removal work plan.

Replace the 1st paragraph of section 15-5.01C(1) with:

10-19-12

Before starting deck rehabilitation activities, complete the removal of any traffic stripes, pavement markings, and pavement markers.

Replace the 2nd and 3rd paragraphs of section 15-5.01C(2) with:

10-19-12

Perform the following activities in the order listed:

1. Abrasive blast the deck surface with steel shot. Perform abrasive blasting after the removal of any unsound concrete and placement of any rapid setting concrete patches.
2. Sweep the deck surface.
3. Blow the deck surface clean using high-pressure air.

Replace the 2nd paragraph of section 15-5.01C(4) with:

10-19-12

Before removing asphalt concrete surfacing, verify the depth of the surfacing at the supports and midspans of each structure (1) in each shoulder, (2) in the traveled way, and (3) at the roadway crown, if a crown is present.

04-19-13

Delete "and concrete expansion dams" in the 3rd paragraph of section 15-5.01C(4).

Replace the 2nd paragraph of section 15-5.03A(2) with:

10-19-12

For a contract with less than 60 original working days, submit certificates of compliance for the filler material and bonding agents.

Replace "51-1.02C" in the 1st paragraph of section 15-5.03B with:

04-19-13

51-1.02F

Replace the 4th paragraph of section 15-5.03B with:

10-19-12

For a contract with less than 60 original working days, alternative materials must be authorized before use.

Add between the 5th and 6th paragraphs of section 15-5.03C:

10-19-12

The final surface finish of the patched concrete surface must comply with section 51-1.03F.

10-19-12

Delete the 4th paragraph of section 15-5.05C.

Replace "51-1.03F(5)" in the 3rd paragraph of section 15-5.06C(1) with:

10-19-12

51-1.01D(4)

Replace "51-1.03E(5)" in the 5th paragraph of section 15-5.06C(1) with:

10-19-12

51-1.03F(5)

10-19-12

Delete the 9th paragraph of section 15-5.06C(1).

04-19-13

Delete the 15th paragraph of section 15-5.06C(1).

Add to section 15-5.06C(1):

10-19-12

Texture the polyester concrete surface before gelling occurs by longitudinal tining under 51-1.03F(5)(b)(iii), except do not perform initial texturing.

Replace section 15-5.06C(2) with:

04-19-13

15-5.06C(2) Reserved

04-19-13

Delete the 3rd paragraph of section 15-5.06D.

Replace the 1st paragraph in section 15-5.07B(4) with:

10-19-12

Payment for furnishing dowels is not included in the payment for core and pressure grout dowel.

Replace section 15-5.09 with:

04-19-13

15-5.09 POLYESTER CONCRETE EXPANSION DAMS

15-5.09A General

Section 15-5.09 includes specifications for constructing polyester concrete expansion dams.

Polyester concrete expansion dams must comply with the specifications for polyester concrete overlays in section 15-5.06, except a trial slab is not required.

Reinforcement must comply with section 52.

15-5.09B Materials

Not Used

15-5.09C Construction

For new asphalt concrete overlays, place the asphalt concrete overlay before starting polyester concrete activities. Saw cut and remove asphalt concrete at expansion dam locations.

For existing asphalt concrete overlays, remove expansion dams and asphalt concrete to the limits shown. Removing expansion dams must comply with section 15-4 except a bridge removal work plan is not required.

Where a portion of the asphalt concrete overlay is to remain, saw cut a 2-inch-deep neat line along the edge to remain in place before removing the asphalt concrete. Do not damage the existing surfacing to remain in place.

Prepare the deck surface under section 15-5.01C(2).

You may use a mechanical mixer to mix the polyester concrete for expansion dams. The mixer capacity must not exceed 9 cu ft unless authorized. Initiate the resin and thoroughly blend it immediately before mixing it with the aggregate. Mix the polyester concrete for at least 2 minutes before placing.

The application rate of methacrylate resin must be approximately 100 sq ft/gal.

You may place and finish expansion dams using hand methods.

Protect expansion dams from moisture, traffic, and equipment for at least 4 hours after finishing.

For expansion dams over 6 feet long, install 1/4-inch-wide joint material at 6-foot intervals across the width of the expansion dam. Joint material must be either expanded polyurethane or expanded polyethylene.

15-5.09D Payment

Not Used

Replace the heading of section 15-6.04 with:

01-18-13

INVERT PAVING

^^

DIVISION III GRADING

19 EARTHWORK

04-19-13

Replace the 2nd paragraph of section 19-3.01A(2)(b) with:

07-01-11

For cofferdams on or affecting railroad property, allow 85 days for review.

Add to the list in the 1st paragraph of section 19-3.01A(2)(d):

01-20-12

9. Provisions for discontinuous rows of soil nails

Replace "sets" in the 3rd and 4th paragraphs of section 19-3.01A(2)(d) with:

04-19-13

copies

Add to section 19-3.01A(3)(b):

01-20-12

For soil nail walls, wall zones are specified in the special provisions.

For ground anchor walls, a wall zone is the entire wall unless otherwise specified in the special provisions.

01-20-12

Delete the 2nd sentence in the 4th paragraph of section 19-3.01A(3)(b).

Replace "90" in the paragraph of section 19-3.02G with:

01-18-13

90-1

Replace the heading of section 19-3.03C with:

04-19-13

19-3.03B(4) Cofferdams

Replace the heading of section 19-3.03D with:

04-19-13

19-3.03B(5) Water Control and Foundation Treatment

Replace the 1st paragraph of section 19-3.03E(3) with:

01-20-12

Compact structure backfill behind lagging of soldier pile walls by hand tamping, mechanical compaction, or other authorized means.

Replace the 2nd paragraph of section 19-3.03F with:

01-20-12

Do not backfill over or place material over slurry cement backfill until 4 hours after placement. When concrete sand is used as aggregate and the in-place material is free draining, you may start backfilling as soon as the surface water is gone.

Add between the 2nd and 3rd paragraphs of section 19-3.03K:

01-20-12

Before you excavate for the installation of ground anchors in a wall zone:

1. Complete stability testing
2. Obtain authorization of test data

Replace the 2nd sentence of the 7th paragraph of section 19-3.03K:

01-20-12

Stop construction in unstable areas until remedial measures have been taken. Remedial measures must be submitted and authorized.

Add between the 8th and 9th paragraphs of section 19-3.03K:

01-20-12

When your excavation and installation methods result in a discontinuous wall along any soil nail row, the ends of the structurally completed wall section must extend beyond the ends of the next lower excavation lift by a distance equal to twice the lift height. Maintain temporary slopes at the ends of each wall section to ensure slope stability.

Replace the 9th paragraph of section 19-3.03K:

01-20-12

Do not excavate to the next underlying excavation lift until the following conditions have been attained for the portion of the soil nail or ground anchor wall in the current excavation lift:

1. Soil nails or ground anchors are installed and grouted.
2. Reinforced shotcrete facing is constructed.

01-18-13

3. Grout and shotcrete have cured for at least 72 hours.

01-20-12

4. Specified tests are complete for that portion of wall and the results are authorized.
5. Soil nail facing anchorages are attached or ground anchors are locked off.

Replace the 2nd sentence in the 7th paragraph of section 19-3.04 with:

01-18-13

Structure excavation more than 0.5 foot from the depth shown is paid for as a work-character change if you request an adjustment or the Engineer orders an adjustment.

Replace "Contract completion time" in the 8th paragraph of section 19-6.03D with:

10-19-12

work completion date

Add to section 19:

01-18-13

19-10–19-20 RESERVED

^^

20 LANDSCAPE

10-19-12

10-19-12

Add "preparing holes," before "and" in the 1st paragraph of section 20-7.01A.

Replace "and handling" in the 1st paragraph of section 20-7.03A with:

10-19-12

handling, and preparing holes

Replace the 1st paragraph of section 20-7.03D with:

10-19-12

The location of all plants is as shown unless the Engineer designates otherwise. If the Engineer designates the location of plants, the location will be marked by stakes, flags, or other markers.

Replace item 1 in the list in the 1st paragraph of section 20-7.03I(1) with:

10-19-12

1. Preparing holes and planting plants

10-19-12

Delete "Prepare Hole," in the last paragraph of section 20-7.04.

^^

21 EROSION CONTROL

04-19-13

Replace ", bonded fiber matrix, and polymer-stabilized fiber matrix" in the 1st paragraph of section 21-1.01B with:

04-20-12

and bonded fiber matrix

04-20-12

Delete the last paragraph of section 21-1.02E.

Replace section 21-1.02F(2) with:

04-20-12

21-1.02F(2) Reserved

Replace section 21-1.02J with:

04-20-12

21-1.02J Reserved

Replace the row for organic matter content in the table in the 4th paragraph of section 21-1.02M with:

01-18-13

Organic matter content	TMECC 05.07-A Loss-on-ignition organic matter method (LOI) % dry weight basis	30–100

Replace the paragraph in section 21-1.02P with:

10-19-12

Fiber roll must be a premanufactured roll filled with rice or wheat straw, wood excelsior, or coconut fiber. Fiber roll must be covered with biodegradable jute, sisal, or coir fiber netting secured tightly at each end and must be one of the following:

1. 8 to 10 inches in diameter and at least 1.1 lb/ft
2. 10 to 12 inches in diameter and at least 3 lb/ft

Fiber roll must have a minimum functional longevity of 1 year.

Add between the 1st and 2nd paragraphs of section 21-1.03A:

01-18-13

Remove and dispose of trash, debris, and weeds in areas to receive erosion control materials.

Remove and dispose of loose rocks larger than 2-1/2 inches in maximum dimension unless otherwise authorized.

Protect the traveled way, sidewalks, lined drainage channels, and existing vegetation from overspray of hydraulically-applied material.

Replace section 21-1.03B with:

01-18-13

21-1.03B Reserved

Replace "3 passes" in item 2 in the list in the 2nd paragraph of section 21-1.03G with:

04-19-13

2 passes

Replace section 21-1.03I with:

04-20-12

21-1.03I Reserved

Add between the 4th and 5th paragraphs of section 21-1.03P:

10-19-12

If soil conditions do not permit driving the stakes into the soil, drill pilot holes to facilitate driving of the stakes.

01-18-13

Delete the 1st and 2nd sentences of the 3rd paragraph in section 21-1.04.

^^

DIVISION IV SUBBASES AND BASES

29 TREATED PERMEABLE BASES

04-20-12

Replace "section 68-4.02C" in the 6th paragraph of section 29-1.03A with:

04-20-12

section 64-4.03

^^

Replace section 30 with:

04-20-12

30 RECLAIMED PAVEMENTS

04-20-12

30-1 GENERAL

30-1.01 GENERAL

Section 30 includes specifications for reclaiming the pavement section and constructing a base.

30-2 FULL DEPTH RECLAIMED—FOAMED ASPHALT

Reserved

30-3–30-6 RESERVED

^^

DIVISION V SURFACINGS AND PAVEMENTS

37 BITUMINOUS SEALS

01-18-13

Replace section 37-1.01 with:

01-18-13

37-1.01 GENERAL

37-1.01A Summary

Section 37-1 includes general specifications for applying bituminous seals.

37-1.01B Definitions

Reserved

37-1.01C Submittals

Reserved

37-1.01D Quality Control and Assurance

37-1.01D(1) General

Reserved

37-1.01D(2) Prepaving Conference

For seal coats and micro-surfacing, schedule a prepaving conference at a mutually agreed upon time and place to meet with the Engineer.

Prepaving conference attendees must sign an attendance sheet provided by the Engineer. The prepaving conference must be attended by your:

1. Project superintendent

2. Paving construction foreman
3. Traffic control foreman

Be prepared to discuss:

1. Quality control
2. Acceptance testing
3. Placement
4. Training on placement methods
5. Checklist of items for proper placement
6. Unique issues specific to the project, including:
   - 6.1. Weather
   - 6.2. Alignment and geometrics
   - 6.3. Traffic control issues
   - 6.4. Haul distances
   - 6.5. Presence and absence of shaded areas
   - 6.6. Any other local issues

37-1.02 MATERIALS

Not Used

37-1.03 CONSTRUCTION

Not Used

37-1.04 PAYMENT

Not Used

Replace "Reserved" in section 37-2.01D(1) with:

01-18-13

Aggregate suppliers, chip spreader operators, emulsion distributor, and for coated chips, the coated chips producer must attend the prepaving conference.

Add to section 37-2.03A:

04-20-12

If you fail to place the permanent traffic stripes and pavement markings within the specified time, the Department withholds 50 percent of the estimated value of the seal coat work completed that has not received permanent traffic stripes and pavement markings.

Add to section 37-3.01D(1):

01-18-13

Micro-surfacing spreader operators must attend the prepaving conference.

^^

39 HOT MIX ASPHALT

02-22-13

Add to section 39-1.01B:

02-22-13

processed RAP: RAP that has been fractionated.

substitution rate: Amount of RAP aggregate substituted for virgin aggregate in percent.

binder replacement: Amount of RAP binder in OBC in percent.

surface course: Upper 0.2 feet of HMA exclusive of OGFC.

Add to the end of the paragraph in section 39-1.02A:

10-19-12

as shown

Replace the paragraphs in section 39-1.02F with:

02-22-13

39-1.02F(1) General

You may produce HMA Type A or B using RAP. HMA produced using RAP must comply with the specifications for HMA, except aggregate quality specifications do not apply to RAP. You may substitute RAP at a substitution rate not exceeding 25 percent of the aggregate blend. Do not use RAP in OGFC and RHMA-G.

Assign the substitution rate of RAP aggregate for virgin aggregate with the JMF submittal. The JMF must include the percent of RAP used.

Provide enough space for meeting RAP handling requirements at your facility. Provide a clean, graded, well-drained area for stockpiles. Prevent material contamination and segregation.

If RAP is from multiple sources, blend the RAP thoroughly and completely. RAP stockpiles must be homogeneous.

Isolate the processed RAP stockpiles from other materials. Store processed RAP in conical or longitudinal stockpiles. Processed RAP must not be agglomerated or be allowed to congeal in large stockpiles.

AASHTO T 324 (Modified) is AASHTO T 324, "Hamburg Wheel-Track Testing of Compacted Hot Mix Asphalt (HMA)," with the following parameters:

1. Target air voids must equal 7 ± 1 percent
2. Number of test specimens must be 4
3. Test specimen must be a 6-inch gyratory compacted specimen
4. Test temperature must be set at 140 ± 2 degrees F
5. Measurements for impression must be taken at every 100 passes
6. Inflection point defined as the number of wheel passes at the intersection of the creep slope and the stripping slope
7. Testing shut off must be set at 25,000 passes

39-1.02F(2) Substitution Rate of 15 Percent or Less

For a RAP substitution rate of 15 percent or less, you may stockpile RAP during the entire project.

39-1.02F(3) Substitution Rate Greater than 15 Percent

For a RAP substitution rate greater than 15 percent, fractionate RAP into 2 sizes, a coarse fraction RAP retained on 1/4-inch screen and a fine fraction RAP passing 1/4-inch screen.

Sample and test processed RAP at a minimum frequency of 1 sample per 1000 tons with a minimum of 6 samples for each processed RAP stockpile. The asphalt binder content and specific gravity must meet the processed RAP quality characteristics. If a processed RAP stockpile is augmented, sample and test processed RAP quality characteristics at a minimum frequency of 1 sample per 500 tons of augmented RAP.

The processed RAP asphalt binder content must be within ± 2.0 percent of the average processed RAP stockpile asphalt binder content when tested under ASTM D 2172, Method B. If a new processed RAP stockpile is required, the average binder content of the new processed RAP stockpile must be within ± 2.0 percent of the average binder content of the original processed RAP stockpile.

The maximum specific gravity for processed RAP must be within ± 0.06 when tested under California Test 309 of the average maximum specific gravity reported on page 4 of your *Contractor Hot Mix Asphalt Design Data* form.

Replace "less than 10 percent" in note "b" in the table in the 5th paragraph of section 39-1.02E with:

01-20-12

10 percent or less

Replace items 7 and 8 in the 5th paragraph of section 39-1.03A with:

02-22-13

7. Substitution rate by more than 5 percent if your assigned RAP substitution rate is 15 percent or less
8. Substitution rate by more than 3 percent if your assigned RAP substitution rate is greater than 15 percent
9. Average binder content by more than 2 percent from the average binder content of the original processed RAP stockpile used in the mix design
10. Maximum specific gravity of processed RAP by more than ±0.060 from the average maximum specific gravity of processed RAP reported on page 4 of your *Contractor Hot Mix Asphalt Design Data* form
11. Any material in the JMF

Replace the 1st paragraph of section 39-1.03B with:

02-22-13

Perform a mix design that produces HMA with the values for the quality characteristics shown in the following table:

HMA Mix Design Requirements

Quality characteristic	Test method	HMA type		
		A	B	RHMA-G
Air void content (%)	California Test 367	4.0	4.0	Section 39-1.03B
Voids in mineral aggregate (% min.)	California			
No. 4 grading	Test 367	17.0	17.0	--
3/8" grading		15.0	15.0	--
1/2" grading		14.0	14.0	18.0–23.0
3/4" grading		13.0	13.0	18.0–23.0
Voids filled with asphalt (%)	California			Note a
No. 4 grading	Test 367	65.0–75.0	65.0–75.0	
3/8" grading		65.0–75.0	65.0–75.0	
1/2" grading		65.0–75.0	65.0–75.0	
3/4" grading		65.0–75.0	65.0–75.0	
Dust proportion	California			Note a
No. 4 and 3/8" gradings	Test 367	0.6–1.2	0.6–1.2	
1/2" and 3/4" gradings		0.6–1.2	0.6–1.2	
Stabilometer value (min.)	California			
No. 4 and 3/8" gradings	Test 366	30	30	--
1/2" and 3/4" gradings		37	35	23

[a] Report this value in the JMF submittal.

For RAP substitution rate greater than 15 percent, the mix design must comply with the additional quality characteristics shown in the following table:

Additional HMA Mix Design Requirements
for RAP Substitution Rate Greater Than 15 Percent

Quality characteristic	Test method	HMA type		
		A	B	RHMA-G
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth)	AASHTO T 324 (Modified)[a]			
PG-58		10,000	10,000	--
PG-64		15,000	15,000	
PG-70		20,000	20,000	
PG-76 or higher		25,000	25,000	
Hamburg wheel track (inflection point minimum number of passes)	AASHTO T 324 (Modified)[a]			
PG-58		10,000	10,000	--
PG-64		10,000	10,000	
PG-70		12,500	12,500	
PG-76 or higher		15000	15000	
Moisture susceptibility (minimum dry strength, psi)	California Test 371[a]	120	120	--
Moisture susceptibility (tensile strength ration, %)	California Test 371[a]	70	70	--

[a]Test plant produced HMA.

For HMA with RAP, the maximum binder replacement must be 25.0 percent of OBC for surface course and 40.0 percent of OBC for lower courses.

For HMA with a binder replacement less than or equal to 25 percent of OBC, you may request that the PG asphalt binder grade with upper and lower temperature classifications be reduced by 6 degrees C from the specified grade.

For HMA with a binder replacement greater than 25 percent but less than or equal to 40 percent of OBC, you must use a PG asphalt binder grade with upper and lower temperature classifications reduced by 6 degrees C from the specified grade.

Replace item 4 in the list in the 1st paragraph of section 39-1.03C with:

01-20-12

4. JMF renewal on a *Caltrans Job Mix Formula Renewal* form, if applicable

Add after the last paragraph of section 39-1.03C:

02-22-13

For RAP substitution rate greater than 15 percent, submit with the JMF submittal:

1. California Test 371 tensile strength ratio and minimum dry strength test results
2. AASHTO T 324 (Modified) test results

For RAP substitution rate greater than 15 percent, submit California Test 371 and AASHTO T 324 (Modified) test results to the Engineer and to:

Moisture_Tests@dot.ca.gov

Replace the 2nd paragraph of section 39-1.03E with:

04-20-12

Use the OBC specified on your *Contractor Hot Mix Asphalt Design Data* form. No adjustments to asphalt binder content are allowed. Based on your testing and production experience, you may submit an adjusted aggregate gradation TV on a *Contractor Job Mix Formula Proposal* form before verification testing. Aggregate gradation TV must be within the TV limits specified in the aggregate gradation tables.

Add between the 3rd and 4th paragraphs of section 39-1.03E:

04-20-12

Asphalt binder set point for HMA must be the OBC specified on your *Contractor Hot Mix Asphalt Design Data* form. When RAP is used, asphalt binder set point for HMA must be:

$$\text{Asphalt Binder Set Point} = \frac{\dfrac{BC_{OBC}}{\left(1 - \dfrac{BC_{OBC}}{100}\right)} - R_{RAP}\left[\dfrac{BC_{RAP}}{\left(1 - \dfrac{BC_{RAP}}{100}\right)}\right]}{100 + \dfrac{BC_{OBC}}{\left(1 - \dfrac{BC_{OBC}}{100}\right)}}$$

Where:
BC_{OBC} = optimum asphalt binder content, percent based on total weight of mix
R_{RAP} = RAP ratio by weight of aggregate
BC_{RAP} = asphalt binder content of RAP, percent based on total weight of RAP mix

Replace item 4 in the list in the 8th paragraph of section 39-1.03E with:

04-20-12

4. HMA quality specified in the table titled "HMA Mix Design Requirements" except:
   4.1. Air void content, design value ±2.0 percent
   4.2. Voids filled with asphalt, report only
   4.3. Dust proportion, report only

Replace the 12th paragraph of section 39-1.03E with:

04-20-12

If tests on plant-produced samples do not verify the JMF, the Engineer notifies you and you must submit a new JMF or submit an adjusted JMF based on your testing. JMF adjustments may include a change in aggregate gradation TV within the TV limits specified in the aggregate gradation tables.

Replace the 14th paragraph of section 39-1.03E with:

01-20-12

A verified JMF is valid for 12 months.

Replace the last sentence in the 15th paragraph of section 39-1.03E with:

01-20-12

This deduction does not apply to verifications initiated by the Engineer or JMF renewal.

Replace the 16th paragraph of section 39-1.03E with:

02-22-13

Except for RAP substitution rate greater than 15 percent, for any HMA produced under the QC/QA process the Department does not use California Test 371 test results for verification.

Add between the 1st and 2nd paragraphs of section 39-1.03F:

04-20-12

Target asphalt binder content on your Contractor *Job Mix Formula Proposal* form and the OBC specified on your *Contractor Hot Mix Asphalt Design Data* form must be the same.

01-20-12

Delete the 4th paragraph of section 39-1.03F.

Replace items 3 and 5 in the list in the 6th paragraph of section 39-1.03F with:

01-20-12

3. Engineer verifies each proposed JMF renewal within 20 days of receiving verification samples.
5. For each HMA type and aggregate gradation specified, the Engineer verifies at the Department's expense 1 proposed JMF renewal within a 12-month period.

Add between the 6th and 7th paragraphs of section 39-1.03F:

01-20-12

The most recent aggregate quality test results within the past 12 months may be used for verification of JMF renewal or the Engineer may perform aggregate quality tests for verification of JMF renewal.

Replace section 39-1.03G with:

04-20-12

39-1.03G Job Mix Formula Modification

For an accepted JMF, you may change asphalt binder source one time during production.

Submit your modified JMF request a minimum of 3 business days before production. Each modified JMF submittal must consist of:

1. Proposed modified JMF on *Contractor Job Mix Formula Proposal* form
2. Mix design records on *Contractor Hot Mix Asphalt Design Data* form for the accepted JMF to be modified
3. JMF verification on *Hot Mix Asphalt Verification* form for the accepted JMF to be modified
4. Quality characteristics test results for the modified JMF as specified in section 39-1.03B. Perform tests at the mix design OBC as shown on the *Contractor Asphalt Mix Design Data* form
5. If required, California Test 371 test results for the modified JMF.

With an accepted modified JMF submittal, the Engineer verifies each modified JMF within 5 business days of receiving all verification samples. If California Test 371 is required, the Engineer tests for California Test 371 within 10 days of receiving verification samples.

The Engineer verifies the modified JMF after the modified JMF HMA is placed on the project and verification samples are taken within the first 750 tons following sampling requirements in section 39-1.03E, "Job Mix Formula Verification." The Engineer tests verification samples for compliance with:

1. Stability as shown in the table titled "HMA Mix Design Requirements"
2. Air void content at design value ±2.0 percent
3. Voids in mineral aggregate as shown in the table titled "HMA Mix Design Requirements"
4. Voids filled with asphalt, report only

5. Dust proportion, report only

If the modified JMF is verified, the Engineer revises your *Hot Mix Asphalt Verification* form to include the new asphalt binder source. Your revised form will have the same expiration date as the original form.

If a modified JMF is not verified, stop production and any HMA placed using the modified JMF is rejected.

The Engineer deducts $2,000 from payments for each modified JMF verification. The Engineer deducts an additional $2,000 for each modified JMF verification that requires California Test 371.

Add to section 39-1.03:

01-20-12

39-1.03H Job Mix Formula Acceptance

You may start HMA production if:

1. The Engineer's review of the JMF shows compliance with the specifications.
2. The Department has verified the JMF within 12 months before HMA production.
3. The Engineer accepts the verified JMF.

Replace "3 days" in the 1st paragraph of section 39-1.04A with:

01-20-12

3 business days

Replace the 2nd sentence in the 2nd paragraph of section 39-1.04A with:

01-20-12

During production, take samples under California Test 125. You may sample HMA from:

Replace the 2nd paragraph of section 39-1.04E with:

02-22-13

For RAP substitution rate of 15 percent or less, sample RAP once daily.

For RAP substitution rate of greater than 15percent, sample processed RAP twice daily.

Perform QC testing for processed RAP aggregate gradation under California Test 367, appendix B, and submit the results with the combined aggregate gradation.

Replace "5 days" in the 1st paragraph of section 39-1.06 with:

01-20-12

5 business days

Replace the 3rd paragraph of section 39-1.08A with:

04-20-12

During production, you may adjust hot or cold feed proportion controls for virgin aggregate and RAP.

Add to section 39-1.08A:

04-20-12

During production, asphalt binder set point for HMA Type A, HMA Type B, HMA Type C, and RHMA-G must be the OBC shown in *Contractor Hot Mix Asphalt Design Data* form. For OGFC, asphalt binder set

point must be the OBC shown on *Caltrans Hot Mix Asphalt Verification* form. If RAP is used, asphalt binder set point for HMA must be calculated as specified in section 39-1.03E.

02-22-13

For RAP substitution rate of 15 percent or less, you may adjust the RAP by ±5 percent.

For RAP substitution greater than 15, you may adjust the RAP by ±3 percent.

04-20-12

You must request adjustments to the plant asphalt binder set point based on new RAP stockpiles average asphalt binder content. Do not adjust the HMA plant asphalt binder set point until authorized.

Replace the 3rd paragraph of section 39-1.08B with:

09-16-11

Asphalt rubber binder must be from 375 to 425 degrees F when mixed with aggregate.

Replace section 39-1.11 with:

01-18-13

39-1.11 CONSTRUCTION

39-1.11A General

Do not place HMA on wet pavement or a frozen surface.

You may deposit HMA in a windrow and load it in the paver if:

1. Paver is equipped with a hopper that automatically feeds the screed
2. Loading equipment can pick up the windrowed material and deposit it in the paver hopper without damaging base material
3. Activities for deposit, pickup, loading, and paving are continuous
4. HMA temperature in the windrow does not fall below 260 degrees F

You may place HMA in 1 or more layers on areas less than 5 feet wide and outside the traveled way, including shoulders. You may use mechanical equipment other than a paver for these areas. The equipment must produce uniform smoothness and texture.

HMA handled, spread, or windrowed must not stain the finished surface of any improvement, including pavement.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

HMA must be free of:

1. Segregation
2. Coarse or fine aggregate pockets
3. Hardened lumps

39-1.11B Longitudinal Joints

39-1.11B(1) General

Longitudinal joints in the top layer must match specified lane edges. Alternate the longitudinal joint offsets in the lower layers at least 0.5 foot from each side of the specified lane edges. You may request other longitudinal joint placement patterns.

A vertical longitudinal joint of more than 0.15 ft is not allowed at any time between adjacent lanes open to traffic.

For HMA thickness of 0.15 ft or less, the distance between the ends of the adjacent surfaced lanes at the end of each day's work must not be greater than can be completed in the following day of normal paving.

For HMA thickness greater than 0.15 ft, you must place HMA on adjacent traveled way lanes so that at the end of each work shift the distance between the ends of HMA layers on adjacent lanes is from 5 to 10 feet. Place additional HMA along the transverse edge at each lane's end and along the exposed longitudinal edges between adjacent lanes. Hand rake and compact the additional HMA to form temporary conforms. You may place Kraft paper or another authorized bond breaker under the conform tapers to facilitate the taper removal when paving operations resume.

39-1.11B(2) Tapered Notched Wedge

For divided highways with an HMA lift thickness greater than 0.15 foot, you may construct a 1-foot wide tapered notched wedge joint as a longitudinal joint between adjacent lanes open to traffic. A vertical notch of 0.75 inch maximum must be placed at the top and bottom of the tapered wedge.

The tapered notched wedge must retain its shape while exposed to traffic. Pave the adjacent lane within 1 day.

Construct the tapered portion of the tapered notched wedge with an authorized strike-off device. The strike-off device must provide a uniform slope and must not restrict the main screed of the paver.

You may use a device attached to the screed to construct longitudinal joints that will form a tapered notched wedge in a single pass. The tapered notched wedge must be compacted to a minimum of 91 percent compaction.

Perform QC testing on the completed tapered notch wedge joint as follows:

1. Perform field compaction tests at the rate of 1 test for each 750-foot section along the joint. Select random locations for testing within each 750-foot section.
2. Perform field compaction tests at the centerline of the joint, 6 inches from the upper vertical notch, after the adjacent lane is placed and before opening the pavement to traffic.
3. Determine maximum density test results.
4. Determine percent compaction of the longitudinal joint as the ratio of the average of the field compaction values and the maximum density test results.

For HMA under QC/QA construction process, the additional quality control compaction results associated with the tapered notch wedge will not be included in the computation of any quality factor and process control.

For acceptance of the completed tapered notch wedge joint, take two 4- or 6-inch diameter cores 6 inches from the upper vertical notch of the completed longitudinal joint for every 3,000 feet at locations designated by the Engineer. Take cores after the adjacent lane is placed and before opening the pavement to traffic. Cores must be taken in the presence of the Engineer and must be marked to identify the test sites. Submit the cores. One core will be used for determination of the field density and 1 core will be used for dispute resolution. The Engineer determines:

1. Field compaction by measuring the bulk specific gravity of the cores under California Test 308, Method A
2. Percent compaction as the ratio of the average of the bulk specific gravity of the core for each day's production to the maximum density test value

For HMA under QC/QA construction process, the additional quality assurance testing by the Engineer to determine field compaction associated with the tapered notch wedge will not be included in the Engineer's verification testing and in the computation of any quality factor and process control.

Determine percent compaction values each day the joint is completed and submit values within 24 hours of testing. If the percent compaction of 1 day's production is less than 91 percent, that day’s notched wedge joint is rejected. Discontinue placement of the tapered notched wedge and notify the Engineer of changes you will make to your construction process in order to meet the specifications.

For HMA under QC/QA construction process, quantities of HMA placed in the completed longitudinal joint will have a quality factor QF_{QC5} of 1.0.

39-1.11C Widening Existing Pavement

If widening existing pavement, construct new pavement structure to match the elevation of the existing pavement's edge before placing HMA over the existing pavement.

39-1.11D Shoulders, Medians, and Other Road Connections

Until the adjoining through lane's top layer has been paved, do not pave the top layer of:

1. Shoulders
2. Tapers
3. Transitions
4. Road connections
5. Driveways
6. Curve widenings
7. Chain control lanes
8. Turnouts
9. Turn pockets

If the number of lanes changes, pave each through lane's top layer before paving a tapering lane's top layer. Simultaneous to paving a through lane's top layer, you may pave an adjoining area's top layer, including shoulders. Do not operate spreading equipment on any area's top layer until completing final compaction.

39-1.11E Leveling

If leveling with HMA is specified, fill and level irregularities and ruts with HMA before spreading HMA over the base, existing surfaces, or bridge decks. You may use mechanical equipment other than a paver for these areas. The equipment must produce uniform smoothness and texture. HMA used to change an existing surface's cross slope or profile is not paid for as HMA (leveling).

If placing HMA against the edge of existing pavement, sawcut or grind the pavement straight and vertical along the joint and remove extraneous material.

39-1.11F Compaction

Rolling must leave the completed surface compacted and smooth without tearing, cracking, or shoving. Complete finish rolling activities before the pavement surface temperature is:

1. Below 150 degrees F for HMA with unmodified binder
2. Below 140 degrees F for HMA with modified binder
3. Below 200 degrees F for RHMA-G

If a vibratory roller is used as a finish roller, turn the vibrator off.

Do not use a pneumatic-tired roller to compact RHMA-G.

For Standard and QC/QA construction processes, if 3/4-inch aggregate grading is specified, you may use a 1/2-inch aggregate grading if the specified total paved thickness is at least 0.15 foot and less than 0.20 foot thick.

Spread and compact HMA under sections 39-3.03 and 39-3.04 if any of the following applies:

1. Specified paved thickness is less than 0.15 foot.
2. Specified paved thickness is less than 0.20 foot and 3/4-inch aggregate grading is specified and used.
3. You spread and compact at:
   - 3.1. Asphalt concrete surfacing replacement areas
   - 3.2. Leveling courses
   - 3.3. Areas for which the Engineer determines conventional compaction and compaction measurement methods are impeded

Do not open new HMA pavement to public traffic until its mid-depth temperature is below 160 degrees F.

If you request and if authorized, you may cool HMA Type A and Type B with water when rolling activities are complete. Apply water under section 17-3.

Spread sand at a rate from 1 to 2 lb/sq yd on new RHMA-G, RHMA-O, and RHMA-O-HB pavement when finish rolling is complete. Sand must be free of clay or organic matter. Sand must comply with section 90-1.02C(4)(c). Keep traffic off the pavement until spreading sand is complete.

Replace the 5th and 6th paragraphs of section 39-1.12C with:

07-20-12

On tangents and horizontal curves with a centerline radius of curvature 2,000 feet or more, the PI_0 must be at most 2.5 inches per 0.1-mile section.

On horizontal curves with a centerline radius of curvature between 1,000 feet and 2,000 feet including pavement within the superelevation transitions, the PI_0 must be at most 5 inches per 0.1-mile section.

Add to section 39-1.12:

01-20-12

39-1.12E Reserved

Add to section 39-1.14:

01-20-12

Prepare the area to receive HMA for miscellaneous areas and dikes, including any excavation and backfill as needed.

Replace "6.8" in item 3 in the list in the 4th paragraph of section 39-1.14 with:

04-20-12

6.4

Replace "6.0" in item 3 in the list in the 4th paragraph of section 39-1.14 with:

04-20-12

5.7

Replace "6.8" in the 1st paragraph of section 39-1.15B with:

04-20-12

6.4

Replace "6.0" in the 1st paragraph of section 39-1.15B with:

04-20-12

5.7

Replace the 1st paragraph of section 39-2.02B with:

02-22-13

Perform sampling and testing at the specified frequency for the quality characteristics shown in the following table:

Minimum Quality Control—Standard Construction Process

Quality characteristic	Test method	Minimum sampling and testing frequency	HMA type			
			A	B	RHMA-G	OGFC
Aggregate gradation[a]	California Test 202	1 per 750 tons and any remaining part at the end of the project	JMF ± Tolerance[b]	JMF ± Tolerance[b]	JMF ± Tolerance[b]	JMF ± Tolerance[b]
Sand equivalent (min)[c]	California Test 217		47	42	47	--
Asphalt binder content (%)	California Test 379 or 382		JMF±0.40	JMF±0.40	JMF ± 0.40	JMF ± 0.40
HMA moisture content (%, max)	California Test 226 or 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	1.0
Field compaction (% max. theoretical density)[d,e]	QC plan	2 per business day (min.)	91–97	91–97	91–97	--
Stabilometer value (min)[c]	California Test 366	1 per 4,000 tons or 2 per 5 business days, whichever is greater				
No. 4 and 3/8" gradings			30	30	--	--
1/2" and 3/4" gradings			37	35	23	--
Air void content (%)[c, f]	California Test 367		4 ± 2	4 ± 2	TV ± 2	--
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants[g]	California Test 226 or 370	2 per day during production	--	--	--	--
Percent of crushed particles coarse aggregate (%, min)	California Test 205	As designated in the QC plan. At least once per project				
One fractured face			90	25	--	90
Two fractured faces			75	--	90	75
Fine aggregate (%, min) (Passing no. 4 sieve and retained on no. 8 sieve.)						
One fractured face			70	20	70	90
Los Angeles Rattler (%, max)	California Test 211					
Loss at 100 rev.			12	--	12	12

Loss at 500 rev.			45	50	40	40
Flat and elongated particles (%, max by weight @ 5:1)	California Test 235		Report only	Report only	Report only	Report only
Fine aggregate angularity (%, min)[h]	California Test 234		45	45	45	--
Voids filled with asphalt (%)[i] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	California Test 367		 65.0–75.0 65.0–75.0 65.0–75.0 65.0–75.0	 65.0–75.0 65.0–75.0 65.0–75.0 65.0–75.0	Report only	--
Voids in mineral aggregate (% min)[i] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	California Test 367		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0–23.0 18.0–23.0	--
Dust proportion[i] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	California Test 367		 0.6-1.2 0.6–1.2	 0.6-1.2 0.6–1.2	Report only	--
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth)[j] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	1 per 10,000 tons or 1 per project whichever is more	 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	--	--
Hamburg wheel track (inflection point minimum number of passes)[j] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	1 per 10,000 tons or 1 per project whichever is more	 10,000 10,000 12,500 15000	 10,000 10,000 12,500 15000	--	--
Moisture susceptibility (minimum dry strength, psi)[j]	California Test 371	For RAP ≥15% 1 per 10,000 tons or 1 per project whichever is greater	120	120	--	--
Moisture susceptibility (tensile strength ration, %)[j]	California Test 371	For RAP ≥15% 1 per 10,000 tons or 1	70	70	--	--

		per project whichever is greater				
Smoothness	Section 39-1.12	--	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	Section 39-1.04C	--	--	1,500–4,000	1,500–4,000
Asphalt modifier	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D
CRM	Section 39-1.02D	Section 39-1.04C	--	--	Section 39-1.02D	Section 39-1.02D

[a] Determine combined aggregate gradation containing RAP under California Test 367.
[b] The tolerances must comply with the allowable tolerances in section 39-1.02E.
[c] Report the average of 3 tests from a single split sample.
[d] Determine field compaction for any of the following conditions:
1. 1/2-inch, 3/8-inch, or no. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[e] To determine field compaction use:
1. In-place density measurements using the method specified in your QC plan.
2. California Test 309 to determine the maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[f] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[g] For adjusting the plant controller at the HMA plant.
[h] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[i] Report only.
[j] Applies to RAP substitution rate greater than 15 percent.

Replace the 1st paragraph of section 39-2.03A with:

02-22-13

The Department samples for acceptance testing and tests for the quality characteristics shown in the following table:

HMA Acceptance—Standard Construction Process

Quality characteristic				Test method	HMA type			
					A	B	RHMA-G	OGFC
Aggregate gradation [a]				California Test 202	JMF ± tolerance [c]	JMF ± tolerance [c]	JMF ± tolerance [c]	JMF ± tolerance [c]
Sieve	3/4"	1/2"	3/8"					
1/2"	X [b]							
3/8"		X						
No. 4			X					
No. 8	X	X	X					
No. 200	X	X	X					
Sand equivalent (min) [d]				California Test 217	47	42	47	--
Asphalt binder content (%)				California Test 379 or 382	JMF±0.40	JMF±0.40	JMF ± 0.40	JMF ± 0.40
HMA moisture content (%, max)				California Test 226 or 370	1.0	1.0	1.0	1.0
Field compaction (% max. theoretical density) [e, f]				California Test 375	91–97	91–97	91–97	--
Stabilometer value (min)[d,]				California Test 366				
No. 4 and 3/8" gradings					30	30	--	--
1/2" and 3/4" gradings					37	35	23	--
Air void content (%) [d, g]				California Test 367	4 ± 2	4 ± 2	TV ± 2	--
Percent of crushed particles				California Test 205				
Coarse aggregate (%, min)								
One fractured face					90	25	--	90
Two fractured faces					75	--	90	75
Fine aggregate (%, min) (Passing no. 4 sieve and retained on no. 8 sieve.)								
One fractured face					70	20	70	90
Los Angeles Rattler (%, max)				California Test 211				
Loss at 100 rev.					12	--	12	12
Loss at 500 rev.					45	50	40	40
Fine aggregate angularity (%, min)[h]				California Test 234	45	45	45	--
Flat and elongated particles (%, max by weight @ 5:1)				California Test 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [i]				California Test 367				
No. 4 grading					65.0–75.0	65.0–75.0		
3/8" grading					65.0–75.0	65.0–75.0	Report only	--
1/2" grading					65.0–75.0	65.0–75.0		
3/4" grading					65.0–75.0	65.0–75.0		
Voids in mineral aggregate (% min) [i]				California Test 367				
No. 4 grading					17.0	17.0	--	--
3/8" grading					15.0	15.0	--	
1/2" grading					14.0	14.0	18.0–23.0	
3/4" grading					13.0	13.0	18.0–23.0	
Dust proportion [l]				California			Report only	--

No. 4 and 3/8" gradings 1/2" and 3/4" gradings	Test 367	0.6-1.2 0.6–1.2	0.6-1.2 0.6–1.2		
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth)[j] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	--	--
Hamburg wheel track (inflection point minimum number of passes)[j] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	 10,000 10,000 12,500 15000	 10,000 10,000 12,500 15000	--	--
Moisture susceptibility (minimum dry strength, psi)[j]	California Test 371	120	120	--	--
Moisture susceptibility (tensile strength ration, %)[j]	California Test 371	70	70	--	--
Smoothness	Section 39-1.12	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge and must grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.01D(2) and section 39-1.02D	Section 92-1.01D(2) and section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
CRM	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under California Test 367.

[b] "X" denotes the sieves the Engineer tests for the specified aggregate gradation.

[c] The tolerances must comply with the allowable tolerances in section 39-1.02E.

[d] The Engineer reports the average of 3 tests from a single split sample.

[e] The Engineer determines field compaction for any of the following conditions:

1. 1/2-inch, 3/8-inch, or no. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.

[f] To determine field compaction, the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine the maximum theoretical density at the frequency specified in California Test 375, Part 5C.

[g]The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

[h] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[i] Report only.

[j]Applies to RAP substitution rate greater than 15 percent.

Replace the 5th paragraph of section 39-2.03A with:

01-20-12

The Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. 1/2-inch, 3/8-inch, or no. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any layer is less than 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.2 foot and any layer is less than 0.20 foot.

Replace the 1st paragraph of section 39-3.02A with:

02-22-13

The Department samples for acceptance testing and tests for the quality characteristics shown in the following table:

HMA Acceptance—Method Construction Process

Quality characteristic	Test method	HMA type			
		A	B	RHMA-G	OGFC
Aggregate gradation [a]	California Test 202	JMF ± tolerance [b]	JMF ± tolerance [b]	JMF ± tolerance [b]	JMF ± tolerance [b]
Sand equivalent (min) [c]	California Test 217	47	42	47	--
Asphalt binder content (%)	California Test 379 or 382	JMF±0.40	JMF±0.40	JMF ± 0.40	JMF ± 0.40
HMA moisture content (%, max)	California Test 226 or 370	1.0	1.0	1.0	1.0
Stabilometer value (min) [c]	California Test 366				
No. 4 and 3/8" gradings		30	30	--	--
1/2" and 3/4" gradings		37	35	23	--
Percent of crushed particles	California Test 205				
Coarse aggregate (% min)					
One fractured face		90	25	--	90
Two fractured faces		75	--	90	75
Fine aggregate (% min) (Passing no. 4 sieve and retained on no. 8 sieve.)					
One fractured face		70	20	70	90
Los Angeles Rattler (% max)	California Test 211				
Loss at 100 rev.		12	--	12	12
Loss at 500 rev.		45	50	40	40
Air void content (%) [c, d]	California Test 367	4 ± 2	4 ± 2	TV ± 2	--
Fine aggregate angularity (% min) [e]	California Test 234	45	45	45	--
Flat and elongated particles (% max by weight @ 5:1)	California Test 235	Report only	Report only	Report only	Report only
Voids filled with asphalt (%) [f]	California Test 367				
No. 4 grading		65.0–75.0	65.0–75.0	Report only	--
3/8" grading		65.0–75.0	65.0–75.0		
1/2" grading		65.0–75.0	65.0–75.0		
3/4" grading		65.0–75.0	65.0–75.0		
Voids in mineral aggregate (% min) [f]	California Test 367				
No. 4 grading		17.0	17.0	--	--
3/8" grading		15.0	15.0	--	
1/2" grading		14.0	14.0	18.0–23.0	
3/4" grading		13.0	13.0	18.0–23.0	
Dust proportion [f]	California Test 367				
No. 4 and 3/8" gradings		0.6–1.2	0.6–1.2	Report only	--
1/2" and 3/4" gradings		0.6–1.2	0.6–1.2		
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth) [g]	AASHTO T 324 (Modified)			--	--
PG-58		10,000	10,000		
PG-64		15,000	15,000		

PG-70 PG-76 or higher		20,000 25,000	20,000 25,000		
Hamburg wheel track (inflection point minimum number of passes)[g] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	 10,000 10,000 12,500 15000	 10,000 10,000 12,500 15000	--	--
Moisture susceptibility (minimum dry strength, psi)[g]	California Test 371	120	120	--	--
Moisture susceptibility (tensile strength ration, %)[g]	California Test 371	70	70	--	--
Smoothness	Section 39-1.12	12-foot straight-edge and must-grind	12-foot straight-edge and must-grind	12-foot straight-edge and must-grind	12-foot straight-edge and must-grind
Asphalt binder	Various	Section 92	Section 92	Section 92	Section 92
Asphalt rubber binder	Various	--	--	Section 92-1.01D(2) and section 39-1.02D	Section 92-1.01D(2) and section 39-1.02D
Asphalt modifier	Various	--	--	Section 39-1.02D	Section 39-1.02D
CRM	Various	--	--	Section 39-1.02D	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under California Test 367.
[b] The tolerances must comply with the allowable tolerances in section 39-1.02E.
[c] The Engineer reports the average of 3 tests from a single split sample.
[d] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[e] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[f] Report only.
[g] Applies to RAP substitution rate greater than 15 percent.

Replace "280 degrees F" in item 2 in the list in the 6th paragraph of section 39-3.04 with:

01-20-12

285 degrees F

Replace "5,000" in the 5th paragraph of section 39-4.02C with:

02-22-13

10,000

Replace the 7th paragraph of section 39-4.02C with:

02-22-13

Except for RAP substitution rate of greater than 15 percent, the Department does not use results from California Test 371 to determine specification compliance.

Replace the 8th paragraph of section 39-4.02C with:

02-22-13

Comply with the values for the HMA quality characteristics and minimum random sampling and testing for quality control shown in the following table:

Minimum Quality Control—QC/QA Construction Process

Quality characteristic	Test method	Minimum sampling and testing frequency	HMA Type			Location of sampling	Maximum reporting time allowance
			A	B	RHMA-G		
Aggregate gradation[a]	California Test 202	1 per 750 tons	JMF ± tolerance[b]	JMF ± tolerance[b]	JMF ± tolerance[b]	California Test 125	24 hours
Asphalt binder content (%)	California Test 379 or 382		JMF±0.40	JMF±0.40	JMF ±0.40	Loose mix behind paver See California Test 125	
Field compaction (% max. theoretical density)[c,d]	QC plan		92–96	92–96	91–96	QC plan	
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants[e]	California Test 226 or 370	2 per day during production	--	--	--	Stock-piles or cold feed belts	--
Sand equivalent (min)[f]	California Test 217	1 per 750 tons	47	42	47	California Test 125	24 hours
HMA moisture content (%,max)	California Test 226 or 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0	1.0	Loose Mix Behind Paver See California Test 125	24 hours
Stabilometer value (min)[f] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	California Test 366	1 per 4,000 tons or 2 per 5 business days, whichever is greater	 30 37	 30 35	 -- 23		48 hours
Air void content (%)[f,g]	California Test 367		4 ± 2	4 ± 2	TV ± 2		

Percent of crushed particles coarse aggregate (% min.): One fractured face Two fractured faces Fine aggregate (% min) (Passing no. 4 sieve and retained on no. 8 sieve): One fractured face	California Test 205	As designated in QC plan. At least once per project.	90 75 70	25 -- 20	-- 90 70	California Test 125	48 hours
Los Angeles Rattler (% max): Loss at 100 rev. Loss at 500 rev.	California Test 211		12 45	-- 50	12 40	California Test 125	
Fine aggregate angularity (% min) [h]	California Test 234		45	45	45	California Test 125	
Flat and elongated particle (% max by weight @ 5:1)	California Test 235		Report only	Report only	Report only	California Test 125	
Voids filled with asphalt (%) [i] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	California Test 367		 65.0–75.0 65.0–75.0 65.0–75.0 65.0–75.0	 65.0–75.0 65.0–75.0 65.0–75.0 65.0–75.0	Report only		
Voids in mineral aggregate (% min.) [i] No. 4 grading 3/8" grading 1/2" grading 3/4" grading	California Test 367		 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0–23.0 18.0–23.0		

Dust proportion[i] No. 4 and 3/8" gradings 1/2" and 3/4" gradings	California Test 367		 0.6–1.2 0.6–1.2	 0.6–1.2 0.6–1.2	Report only		
Hamburg wheel track (minimum number of passes at 0.5 inch average rut depth)[i] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	1 per 10,000 tons or 1 per project whichever is greater	 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	--	--	
Hamburg wheel track (inflection point minimum number of passes)[j] PG-58 PG-64 PG-70 PG-76 or higher	AASHTO T 324 (Modified)	1 per 10,000 tons or 1 per project whichever is greater	 10,000 10,000 12,500 15000	 10,000 10,000 12,500 15000	--	--	
Moisture susceptibility (minimum dry strength, psi) [j]	California Test 371	1 per 10,000 tons or 1 per project whichever is greater	120	120	--	--	
Moisture susceptibility (tensile strength ratio, %)[j]	California Test 371	1 per 10,000 tons or 1 per project whichever is greater	70	70	70	--	
Smoothness	Section 39-1.12	--	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	12-foot straight-edge, must-grind, and PI_0	--	
Asphalt rubber binder viscosity @ 375 °F, centipoises	Section 39-1.02D	--	--	--	1,500–4,000	Section 39-1.02D	24 hours
CRM	Section 39-1.02D	--	--	--	Section 39-1.02D	Section 39-1.02D	48 hours

[a] Determine combined aggregate gradation containing RAP under California Test 367.
[b] The tolerances must comply with the allowable tolerances in section 39-1.02E.
[c] Determines field compaction for any of the following conditions:
1. 1/2-inch, 3/8-inch, or no. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot.2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.
[d] To determine field compaction use:
1. In-place density measurements using the method specified in your QC plan.
2. California Test 309 to determine the maximum theoretical density at the frequency specified in California Test 375, Part 5C.
[e] For adjusting the plant controller at the HMA plant.
[f] Report the average of 3 tests from a single split sample.
[g] Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[h] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[i] Report only.
[j] Applies to RAP substitution rate greater than 15 percent.

Replace the 1st sentence in the 1st paragraph of section 39-4.03B(2) with:

01-20-12

For aggregate gradation and asphalt binder content, the minimum ratio of verification testing frequency to quality control testing frequency is 1:5.

Replace the 2nd "and" in the 7th paragraph of section 39-4.03B(2) with:

01-20-12

or

Replace the 1st paragraph of section 39-4.04A with:

02-22-13

The Engineer samples for acceptance testing and tests for the following quality characteristics:

HMA Acceptance—QC/QA Construction Process

Index (i)	Quality characteristic				Weight-ing factor (w)	Test method	HMA type		
							A	B	RHMA-G
		Aggregate gradation [a]							
	Sieve	3/4"	1/2"	3/8"					
1	1/2"	X [b]	--	--	0.05	California Test 202	JMF ± Tolerance [c]		
1	3/8"	--	X	--	0.05				
1	No. 4	--	--	X	0.05				
2	No. 8	X	X	X	0.10				
3	No. 200	X	X	X	0.15				
4	Asphalt binder content (%)				0.30	California Test 379 or 382	JMF±0.40	JMF±0.40	JMF ± 0.40
5	Field compaction (% max. theoretical density) [d, e]				0.40	California Test 375	92–96	92–96	91–96
	Sand equivalent (min) [f]					California Test 217	47	42	47
	Stabilometer value (min) [f] No. 4 and 3/8" gradings 1/2" and 3/4" gradings					California Test 366	 30 37	 30 35	 -- 23
	Air void content (%) [f, g]					California Test 367	4 ± 2	4 ± 2	TV ± 2
	Percent of crushed particles coarse aggregate (% min) One fractured face Two fractured faces Fine aggregate (% min) (Passing no. 4 sieve and retained on No. 8 sieve.) One fractured face					California Test 205	 90 75 70	 25 -- 20	 -- 90 70
	HMA moisture content (%, max)					California Test 226 or 370	1.0	1.0	1.0
	Los Angeles Rattler (% max) Loss at 100 rev. Loss at 500 rev.					California Test 211	 12 45	 -- 50	 12 40
	Fine aggregate angularity (% min) [h]					California Test 234	45	45	45
	Flat and elongated particle (% max by weight @ 5:1)					California Test 235	Report only	Report only	Report only
	Voids in mineral aggregate (% min) [i] No. 4 grading 3/8" grading 1/2" grading 3/4" grading					California Test 367	 17.0 15.0 14.0 13.0	 17.0 15.0 14.0 13.0	 -- -- 18.0–23.0 18.0–23.0

	Voids filled with asphalt (%) [i] No. 4 grading 3/8" grading 1/2" grading 3/4" grading		California Test 367	 65.0–75.0 65.0–75.0 65.0–75.0 65.0–75.0	 65.0–75.0 65.0–75.0 65.0–75.0 65.0–75.0	Report only
	Dust proportion [i] No. 4 and 3/8" gradings 1/2" and 3/4" gradings		California Test 367	 0.6–1.2 0.6–1.2	 0.6–1.2 0.6–1.2	Report only
	Hamburg Wheel Tracker (minimum number of passes at 0.5 inch average rut depth) [j] PG-58 PG-64 PG-70 PG-76 or higher		AASHTO T 324 (Modified)	 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	--
	Hamburg Wheel Tracker (inflection point minimum number of passes) [j] PG-58 PG-64 PG-70 PG-76 or higher		AASHTO T 324 (Modified)	 10,000 15,000 20,000 25,000	 10,000 15,000 20,000 25,000	--
	Moisture susceptibility (minimum dry strength, psi) [j]		California Test 371	120	120	--
	Moisture susceptibility (tensile strength ratio %)[j]		California Test 371	70	70	70
	Smoothness		Section 39-1.12	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0	12-foot straight-edge, must grind, and PI_0
	Asphalt binder		Various	Section 92	Section 92	Section 92
	Asphalt rubber binder		Various	--	--	Section 92-1.01D(2) and section 39-1.02D
	Asphalt modifier		Various	--	--	Section 39-1.02D
	CRM		Various	--	--	Section 39-1.02D

[a] The Engineer determines combined aggregate gradations containing RAP under California Test 367.
[b] "X" denotes the sieves the Engineer tests for the specified aggregate gradation.
[c] The tolerances must comply with the allowable tolerances in section 39-1.02E.
[d] The Engineer determines field compaction for any of the following conditions:
1. 1/2-inch, 3/8-inch, or no. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and less than 0.20 foot.2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 foot.
[e] To determine field compaction, the Engineer uses:
1. California Test 308, Method A, to determine in-place density of each density core.
2. California Test 309 to determine the maximum theoretical density at the frequency specified in California Test 375, Part 5C.
[f] The Engineer reports the average of 3 tests from a single split sample.
[g] The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.
[h] The Engineer waives this specification if HMA contains 10 percent or less of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.
[i] Report only.
[j] Applies to RAP substitution rate greater than 15 percent.

Replace the 3rd paragraph of section 39-4.04A with:

01-20-12

The Department determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA thickness if any of the following applies:

1. 1/2-inch, 3/8-inch, or no. 4 aggregate grading is used and the specified total paved thickness is at least 0.15 foot and any lager is less than 0.15 foot.
2. 3/4-inch aggregate grading is used and the specified total paved thickness is at least 0.20 and any layer is less than 0.20 foot.

^^

40 CONCRETE PAVEMENT

01-20-12

Replace section 40-1.01C(4) with:

01-20-12

40-1.01C(4) Authorized Laboratory

Submit for authorization the name of the laboratory you propose to use for testing the drilled core specimens for air content.

Replace the paragraph in section 40-1.01C(8) with:

01-20-12

Submit a plan for protecting concrete pavement during the initial 72 hours after paving when the forecasted minimum ambient temperature is below 40 degrees F.

01-20-12

Delete "determined under California Test 559" in section 40-1.01C(9).

Replace the 2nd and 3rd paragraphs in section 40-1.01D(4) with:

01-20-12

The QC plan must include details of corrective action to be taken if any process is out of control. As a minimum, a process is out of control if any of the following occurs:

1. For fine and coarse aggregate gradation, 2 consecutive running averages of 4 tests are outside the specification limits
2. For individual penetration or air content measurements:
   2.1. One point falls outside the suspension limit line
   2.2. Two points in a row fall outside the action limit line

Stop production and take corrective action for out of control processes or the Engineer rejects subsequent material.

Replace the 1st paragraph in section 40-1.01D(5) with:

01-20-12

Determine the minimum cementitious materials content. Use your value for minimum cementitious material content for *MC* in equation 1 and equation 2 of section 90-1.02B(3).

Replace the 1st sentence of the 3rd paragraph of section 40-1.01D(9) with:

01-20-12

Use a California profilograph to determine the concrete pavement profile.

Replace the title of the table in section 40-1.01D(13)(a) with:

01-20-12

Concrete Pavement Acceptance Testing

Replace the 2nd and 3rd paragraphs in section 40-1.01D(13)(a) with:

01-20-12

Pavement smoothness may be accepted based on the Department's testing. A single test represents no more than 0.1 mile.

Acceptance of modulus of rupture, thickness, dowel bar and tie bar placement, coefficient of friction, smoothness, and air content, does not constitute final concrete pavement acceptance.

01-20-12

Delete item 4 in the list in the 2nd paragraph in section 40-1.01D(13)(c)(2).

Replace items 1 and 2 in the list in the 2nd paragraph in 40-1.01D(13)(d) with:

01-20-12

1. For tangents and horizontal curves having a centerline radius of curvature 2,000 feet or more, the PI_0 must be at most 2-1/2 inches per 0.1-mile section.
2. For horizontal curves having a centerline radius of curvature from 1,000 to 2,000 feet including concrete pavement within the superelevation transitions of those curves, the PI_0 must be at most 5 inches per 0.1-mile section.

Replace the 1st and 2nd variables in the equation in section 40-1.01D(13)(f) with:

01-20-12

n_c = Number of your quality control tests (minimum of 6 required)

n_v = Number of verification tests (minimum of 2 required)

Replace "Your approved third party independent testing laboratory" in the 4th paragraph of section 40-1.01D(13)(f) with:

01-20-12

The authorized laboratory

Replace item 2 in the list in the 2nd paragraph of section 40-1.01D(13)(g):

01-20-12

2. One test for every 4,000 square yards of concrete pavement with tie bars or remaining fraction of that area. Each tie bar test consists of 2 cores with 1 on each tie-bar-end to expose both ends and allow measurement.

Replace section 40-1.01D(13)(h) with:

01-20-12

40-1.01D(13)(h) Bar Reinforcement

Bar reinforcement is accepted based on inspection before concrete placement.

Replace the paragraph in section 40-1.02B(2) with:

01-20-12

PCC for concrete pavement must comply with section 90-1 except as otherwise specified.

Replace the paragraphs in section 40-1.02D with:

01-20-12

Bar reinforcement must be deformed bars.

If the project is not shown to be in high desert or any mountain climate region, bar reinforcement must comply with section 52.

If the project is shown to be in high desert or any mountain climate regions, bar reinforcement must be one of the following:

1. Epoxy-coated bar reinforcement under section 52-2.03B except bars must comply with either ASTM A 706/A 706M; ASTM A 996/A 996M; or ASTM A 615/A 615M, Grade 40 or 60. Bars must be handled under ASTM D 3963/D 3963M and section 52-2.02C.
2. Low carbon, chromium steel bar complying with ASTM A 1035/A 1035M

Replace the paragraphs in section 40-1.02E with:

01-20-12

Tie bars must be deformed bars.

If the project is not shown to be in high desert or any mountain climate region, tie bars must be one of the following:

1. Epoxy-coated bar reinforcement. Bars must comply with either section 52-2.02B or 52-2.03B except bars must comply with either ASTM A 706/A 706M; ASTM A 996/A 996M; or ASTM A 615/A 615M, Grade 40 or 60.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.
3. Low carbon, chromium-steel bars under ASTM A 1035/A 1035M.

If the project is shown to be in high desert or any mountain climate region, tie bars must be one of the following:

1. Epoxy-coated bar reinforcement. Bars must comply with section 52-2.03B except bars must comply with either ASTM A 706/A 706M; ASTM A 996/A 996M; or ASTM A 615/A 615M, Grade 40 or 60.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.

Fabricate, sample, and handle epoxy-coated tie bars under ASTM D 3963/D 3963M, section 52-2.02C, or section 52-2.03C.

Do not bend tie bars.

Replace the 1st, 2nd, and 3rd paragraphs in section 40-1.02F with:

01-20-12

Dowel bars must be plain bars. Fabricate, sample, and handle epoxy-coated dowel bars under ASTM D 3963/D 3963M and section 52-2.03C except each sample must be 18 inches long.

If the project is not shown to be in high desert or any mountain climate region, dowel bars must be one of the following:

1. Epoxy-coated bars. Bars must comply with ASTM A 615/A 615M, Grade 40 or 60. Epoxy coating must comply with either section 52-2.02B or 52-2.03B.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.
3. Low carbon, chromium-steel bars under ASTM A 1035/A 1035M.

If the project is shown to be in high desert or any mountain climate region, dowel bars must be one of the following:

1. Epoxy-coated bars. Bars must comply with ASTM A 615/A 615M, Grade 40 or 60. Epoxy coating must comply with section 52-2.03B.
2. Stainless-steel bars. Bars must be descaled, pickled, polished, and solid stainless-steel bars under ASTM A 955/A 955M, Grade 60, UNS Designation S31603 or S31803.

Replace the paragraphs in section 40-1.02G with:

01-20-12

For dowel and tie bar baskets, wire must comply with ASTM A 82/A 82M and be welded under ASTM A 185/A 185M, Section 7.4. The minimum wire-size no. is W10. Use either U-frame or A-frame shaped assemblies.

If the project is not shown to be in high desert or any mountain climate region. Baskets may be epoxy-coated, and the epoxy coating must comply with either section 52-2.02B or 52-2.03B.

If the project is shown to be in high desert or any mountain climate region, wire for dowel bar and tie bar baskets must be one of the following:

1. Epoxy-coated wire complying with section 52-2.03B
2. Stainless-steel wire. Wire must be descaled, pickled, and polished solid stainless-steel. Wire must comply with (1) the chemical requirements in ASTM A 276/A 276M, UNS Designation S31603 or S31803 and (2) the tension requirements in ASTM A 1022/ A 1022M.

Handle epoxy-coated tie bar and dowel bar baskets under ASTM D 3963/D 3963M and either section 52-2.02B or 52-2.03B.

Fasteners must be driven fasteners under ASTM F 1667. Fasteners on lean concrete base or HMA must have a minimum shank diameter of 3/16 inch and a minimum shank length of 2-1/2 inches. For asphalt

treated permeable base or cement treated permeable base, the shank diameter must be at least 3/16 inch and the shank length must be at least 5 inches.

Fasteners, clips, and washers must have a minimum 0.2-mil thick zinc coating applied by either electroplating or galvanizing.

Replace the 1st paragraph in section 40-1.02H with:

01-20-12

Chemical adhesive for drilling and bonding dowels and tie bars must be on the Authorized Material List. The Authorized Material List indicates the appropriate chemical adhesive system for the concrete temperature and installation conditions.

Replace section 40-1.02I(2) with:

01-20-12

40-1.02I(2) Silicone Joint Sealant

Silicone joint sealant must be on the Authorized Material List.

Replace the last sentence in section 40-1.02I(4) with:

01-20-12

Show evidence that the seals are compressed from 30 to 50 percent for the joint width at time of installation.

Replace the paragraph in section 40-1.02L with:

01-20-12

Water for core drilling may be obtained from a potable water source, or submit proof that it does not contain:

1. More than 1,000 parts per million of chlorides as Cl
2. More than 1,300 parts per million of sulfates as $S0_4$
3. Impurities that cause pavement discoloration or surface etching

Replace the paragraph in section 40-1.03B with:

01-20-12

Before placing concrete pavement, develop enough water supply for the work under section 17.

Replace the last paragraph in section 40-1.03D(1) with:

01-20-12

Removal of grinding residue must comply with section 42-1.03B.

Replace the 1st and 2nd paragraphs in section 40-1.03E(6)(c) with:

01-20-12

Install preformed compressions seals in isolation joints if specified in the special provisions.

Install longitudinal seals before transverse seals. Longitudinal seals must be continuous except splicing is allowed at intersections with transverse seals. Transverse seals must be continuous for the entire transverse length of concrete pavement except splices are allowed for widenings and staged construction. With a sharp instrument, cut across the longitudinal seal at the intersection with transverse

construction joints. If the longitudinal seal does not relax enough to properly install the transverse seal, trim the longitudinal seal to form a tight seal between the 2 joints.

If splicing is authorized, splicing must comply with the manufacturer's written instructions.

Replace the 12th and 13th paragraphs in section 40-1.03G with:

01-20-12

Construct additional test strips if you:

1. Propose different paving equipment including:
   1.1. Paver
   1.2. Dowel bar inserter
   1.3. Tie bar inserter
   1.4. Tining
   1.5. Curing equipment
2. Change concrete mix proportions

You may request authorization to eliminate the test strip if you use paving equipment and personnel from a Department project (1) for the same type of pavement and (2) completed within the past 12 months. Submit supporting documents and previous project information with your request.

Replace the 1st paragraph in section 40-1.03I with:

01-20-12

Place tie bars in compliance with the tolerances shown in the following table:

Tie Bar Tolerance

Dimension	Tolerance
Horizontal and vertical skew	10 degrees maximum
Longitudinal translation	± 2 inch maximum
Horizontal offset (embedment)	± 2 inch maximum
Vertical depth	1. Not less than 1/2 inch below the saw cut depth of joints 2. When measured at any point along the bar, not less than 2 inches clear of the pavement's surface and bottom

Replace item 4 in the list in the 2nd paragraph in section 40-1.03I with:

01-20-12

4. Use tie bar baskets. Anchor baskets at least 200 feet in advance of pavement placement activity. If you request a waiver, describe the construction limitations or restricted access preventing the advanced anchoring. After the baskets are anchored and before paving, demonstrate the tie bars do not move from their specified depth and alignment during paving. Use fasteners to anchor tie bar baskets.

Replace "The maximum distance below the depth shown must be 0.05 foot." in the table in section 40-1.03J with:

01-20-12

The maximum distance below the depth shown must be 5/8 inch.

Replace sections 40-1.03L and 40-1.03M with:

01-20-12

40-1.03L Finishing

40-1.03L(1) General

Reserved

40-1.03L(2) Preliminary Finishing

40-1.03L(2)(a) General

Preliminary finishing must produce a smooth and true-to-grade finish. After preliminary finishing, mark each day's paving with a stamp. The stamp must be authorized before paving starts. The stamp must be approximately 1 by 2 feet in size. The stamp must form a uniform mark from 1/8 to 1/4 inch deep. Locate the mark 20 ± 5 feet from the transverse construction joint formed at each day's start of paving and 1 ± 0.25 foot from the pavement's outside edge. The stamp mark must show the month, day, and year of placement and the station of the transverse construction joint. Orient the stamp mark so it can be read from the pavement's outside edge.

Do not apply more water to the pavement surface than can evaporate before float finishing and texturing are completed.

40-1.03L(2)(b) Stationary Side Form Finishing

If stationary side form construction is used, give the pavement a preliminary finish by the machine float method or the hand method.

If using the machine float method:

1. Use self-propelled machine floats.
2. Determine the number of machine floats required to perform the work at a rate equal to the pavement delivery rate. If the time from paving to machine float finishing exceeds 30 minutes, stop pavement delivery. When machine floats are in proper position, you may resume pavement delivery and paving.
3. Run machine floats on side forms or adjacent pavement lanes. If running on adjacent pavement, protect the adjacent pavement surface under section 40-1.03P. Floats must be hardwood, steel, or steel-shod wood. Floats must be equipped with devices that adjust the underside to a true flat surface.

If using the hand method, finish pavement smooth and true to grade with manually operated floats or powered finishing machines.

40-1.03L(2)(c) Slip-Form Finishing

If slip-form construction is used, the slip-form paver must give the pavement a preliminary finish. You may supplement the slip-form paver with machine floats.

Before the pavement hardens, correct pavement edge slump in excess of 0.02 foot exclusive of edge rounding.

40-1.03L(3) Final Finishing

After completing preliminary finishing, round the edges of the initial paving widths to a 0.04-foot radius. Round transverse and longitudinal construction joints to a 0.02-foot radius.

Before curing, texture the pavement. Perform initial texturing with a burlap drag or broom device that produces striations parallel to the centerline. Perform final texturing with a steel-tined device that produces grooves parallel with the centerline.

Construct longitudinal grooves with a self-propelled machine designed specifically for grooving and texturing pavement. The machine must have tracks to maintain constant speed, provide traction, and maintain accurate tracking along the pavement surface. The machine must have a single row of rectangular spring steel tines. The tines must be from 3/32 to 1/8 inch wide, on 3/4-inch centers, and must have enough length, thickness, and resilience to form grooves approximately 3/16 inch deep. The machine must have horizontal and vertical controls. The machine must apply constant down pressure on the pavement surface during texturing. The machines must not cause ravels.

Construct grooves over the entire pavement width in a single pass except do not construct grooves 3 inches from the pavement edges and longitudinal joints. Final texture must be uniform and smooth. Use a guide to properly align the grooves. Grooves must be parallel and aligned to the pavement edge across the pavement width. Grooves must be from 1/8 to 3/16 inch deep after the pavement has hardened.

For irregular areas and areas inaccessible to the grooving machine, you may hand-construct grooves under section 40-1.03L(2) using the hand method. Hand-constructed grooves must comply with the specifications for machine-constructed grooves.

Initial and final texturing must produce a coefficient of friction of at least 0.30 when tested under California Test 342. Notify the Engineer when the pavement is scheduled to be opened to traffic to allow at least 25 days for the Department to schedule testing for coefficient of friction. Notify the Engineer when the pavement is ready for testing which is the latter of:

1. Seven days after paving
2. When the pavement has attained a modulus of rupture of 550 psi

The Department tests for coefficient of friction within 7 days of receiving notification that the pavement is ready for testing.

Do not open the pavement to traffic unless the coefficient of friction is at least 0.30.

40-1.03M Reserved

Replace the 4th paragraph of 40-1.03P with:

01-20-12

Construct crossings for traffic convenience. If authorized, you may use RSC for crossings. Do not open crossings until the Department determines that the pavement's modulus of rupture is at least 550 psi under California Test 523 or California Test 524.

Replace the 1st paragraph of section 40-6.01A with:

01-20-12

Section 40-6 includes specifications for applying a high molecular weight methacrylate resin system to pavement surface cracks that do not extend the full slab depth.

Replace the 4th paragraph of section 40-6.01C(2) with:

01-20-12

If the project is in an urban area adjacent to a school or residence, the public safety plan must also include an airborne emissions monitoring plan prepared by a CIH certified in comprehensive practice by the American Board of Industrial Hygiene. Submit a copy of the CIH's certification. The CIH must monitor the emissions at a minimum of 4 points including the mixing point, the application point, and the point of nearest public contact. At work completion, submit a report by the industrial hygienist with results of the airborne emissions monitoring plan.

01-20-12

Delete the 1st sentence of the 2nd paragraph in section 40-6.02B.

Replace item 4 in the list in the last paragraph in section 40-6.03A with:

01-20-12

4. Coefficient of friction is at least 0.30 under California Test 342

Replace the paragraph in section 40-6.04 with:

01-20-12

Not Used

Add to section 40:

01-20-12

40-7–40-15 RESERVED

^^

41 CONCRETE PAVEMENT REPAIR

10-19-12

Replace "41-1.02" in the 1st paragraph of section 41-3.02 with:

10-19-12

41-2.02

Add to section 41-4.03:

10-19-12

41-4.03J–41-4.03M Reserved

Replace "41-8" in the 3rd paragraph of section 41-7.03 with:

10-19-12

41-9 except

^^

DIVISION VI STRUCTURES

46 GROUND ANCHORS AND SOIL NAILS

04-19-13

Replace the 1st paragraph of section 46-1.01C(2) with:

04-19-13

Submit 5 copies of shop drawings to OSD, Documents Unit. Notify the Engineer of the submittal. Include in the notification the date and contents of the submittal. Allow 30 days for the Department's review. After review, submit from 6 to 12 copies, as requested, for authorization and use during construction.

Shop drawings and calculations must be sealed and signed by an engineer who is registered as a civil engineer in the State.

Replace the 3rd paragraph of section 46-1.01C(2) with:

01-18-13

Ground anchor shop drawings must include:

1. Details and specifications for the anchorage system and ground anchors.
2. Details for the transition between the corrugated plastic sheathing and the anchorage assembly.
3. If shims are used during lock-off, shim thickness and supporting calculations.
4. Calculations for determining the bonded length. Do not rely on any capacity from the grout-to-ground bond within the unbonded length.

01-18-13

Delete the 5th and 6th paragraphs of section 46-1.01C(2).

Replace the 4th paragraph of section 46-1.01D(2)(b) with:

01-18-13

Each jack and its gage must be calibrated as a unit under the specifications for jacks used to tension prestressing steel permanently anchored at 25 percent or more of its specified minimum ultimate tensile strength in section 50-1.01D(3).

10-19-12

Delete the 3rd paragraph of section 46-1.01D(2)(d).

Add to section 46-1.03B:

04-20-12

Dispose of drill cuttings under section 19-2.03B.

Replace the 1st sentence of the 3rd paragraph of section 46-2.01A with:

04-20-12

Ground anchors must comply with section 50.

Add to section 46-2.02B:

04-20-12

Strand tendons, bar tendons, bar couplers, and anchorage assemblies must comply with section 50.

^^

47 EARTH RETAINING SYSTEMS

04-19-13

Replace the 2nd paragraph of section 47-2.01D with:

02-17-12

Coupler test samples must comply with minimum tensile specifications for steel wire in ASTM A 82/A 82M. Total wire slip must be at most 3/16 inch when tested under the specifications for tension testing of round wire test samples in ASTM A 370.

Replace "78-80" in the 1st table in the 2nd paragraph of section 47-2.02C with:

10-19-12

78-100

Replace the value for the sand equivalent requirement in the 2nd table in the 3rd paragraph of section 47-2.02C with:

01-20-12

12 minimum

Replace the 1st paragraph of section 47-2.02E with:

02-17-12

Steel wire must comply with ASTM A 82/A 82M. Welded wire reinforcement must comply with ASTM A 185/A 185M.

Add between the 2nd and 3rd paragraphs of section 47-3.02A:

10-19-12

Reinforcement must comply with section 52.

10-19-12

Delete the 1st paragraph of section 47-3.02B(2)(b).

Add between the 3rd and 4th paragraphs of section 47-5.01:

10-19-12

Reinforcement must comply with section 52.

Add to section 47-6.01A:

10-19-12

The alternative earth retaining system must comply with the specifications for the type of wall being constructed.

Replace "sets" at each occurrence in the 1st paragraph of section 47-6.01C with:

04-19-13

copies

^^

48 TEMPORARY STRUCTURES

04-19-13

Replace "previously welded splice" and its definition in section 48-2.01B with:

04-19-13

previously welded splice: Splice made in a falsework member in compliance with AWS D1.1 or other recognized welding standard before contract award.

04-19-13

Delete "field" in the 1st sentence of the 5th paragraph of section 48-2.01C(1).

Replace item 1 in the list in the 6th paragraph of section 48-2.01C(1) with:

04-19-13

1. Itemize the testing, inspection methods, and acceptance criteria used

Replace the 7th paragraph of section 48-2.01C(2) with:

09-16-11

If you submit multiple submittals at the same time or additional submittals before review of a previous submittal is complete:

1. You must designate a review sequence for submittals
2. Review time for any submittal is the review time specified plus 15 days for each submittal of higher priority still under review

Replace the 1st paragraph of section 48-2.01D(2) with:

04-19-13

Welding must comply with AWS D1.1 or other recognized welding standard, except for fillet welds where the load demands are 1,000 lb or less per inch for each 1/8 inch of fillet weld.

Replace the 1st through 3rd sentences in the 2nd paragraph of section 48-2.01D(2) with:

04-19-13

Perform NDT on welded splices using UT or RT. Each weld and any repair made to a previously welded splice must be tested.

Replace the 3rd paragraph of section 48-2.01D(2) with:

04-19-13

For previously welded splices, perform and document all necessary testing and inspection required to certify the ability of the falsework members to sustain the design stresses.

^^

49 PILING

04-19-13

Replace "sets" in the 1st paragraph of section 49-1.01C(2) with:

04-19-13

copies

Replace "set" in the 2nd paragraph of section 49-1.01C(2) with:

04-19-13

copy

Replace "Load Applied to Pile by Hydraulic Jack(s) Acting at One End of Test Beam(s) Anchored to the Pile" in the 5th paragraph of section 49-1.01D(2) with:

07-20-12

"Tensile Load Applied by Hydraulic Jack(s) Acting Upward at One End of Test Beam(s)"

Add to section 49-1.03:

04-20-12

Dispose of drill cuttings under section 19-2.03B.

Replace the 2nd paragraph of section 49-2.01D with:

01-20-12

Furnish piling is measured along the longest side of the pile from the specified tip elevation shown to the plane of pile cutoff.

Replace "sets" in the 1st paragraph of section 49-2.04A(3) with:

04-19-13

copies

Replace the 3rd and 4th paragraphs of section 49-2.04B(2) with:

10-19-12

Piles in a corrosive environment must be steam or water cured under section 90-4.03.

If piles in a corrosive environment are steam cured, either:

1. Keep the piles continuously wet for at least 3 days. The 3 days includes the holding and steam curing periods.
2. Apply curing compound under section 90-1.03B(3) after steam curing.

Add to section 49-3.01A:

01-20-12

Concrete must comply with section 51.

Replace the 1st paragraph of section 49-3.01C with:

01-20-12

Except for CIDH concrete piles constructed under slurry, construct CIP concrete piles such that the excavation methods and the concrete placement procedures provide for placing the concrete against undisturbed material in a dry or dewatered hole.

Replace "Reserved" in section 49-3.02A(2) with:

01-20-12

dry hole:

1. Except for CIDH concrete piles specified as end bearing, a drilled hole that:
   1.1. Accumulates no more than 12 inches of water in the bottom of the drilled hole during a period of 1 hour without any pumping from the hole during the hour.
   1.2. Has no more than 3 inches of water in the bottom of the drilled hole immediately before placing concrete.
2. For CIDH concrete piles specified as end bearing, a drilled hole free of water without the use of pumps.

Replace "Reserved" in section 49-3.02A(3)(a) with:

01-20-12

If plastic spacers are proposed for use, submit the manufacturer's data and a sample of the plastic spacer. Allow 10 days for review.

Replace item 5 in the list in the 1st paragraph of section 49-3.02A(3)(b) with:

10-19-12

5. Methods and equipment for determining:
   5.1. Depth of concrete
   5.2. Theoretical volume of concrete to be placed, including the effects on volume if casings are withdrawn
   5.3. Actual volume of concrete placed

Add to the list in the 1st paragraph of section 49-3.02A(3)(b):

01-18-13

8. Drilling sequence and concrete placement plan.

Replace item 2 in the list in the 1st paragraph of section 49-3.02A(3)(g) with:

01-20-12

2. Be sealed and signed by an engineer who is registered as a civil engineer in the State. This requirement is waived for either of the following conditions:
   2.1. The proposed mitigation will be performed under the current Department-published version of *ADSC Standard Mitigation Plan 'A' - Basic Repair* without exception or modification.
   2.2. The Engineer determines that the rejected pile does not require mitigation due to structural, geotechnical, or corrosion concerns, and you elect to repair the pile using the current Department-published version of *ADSC Standard Mitigation Plan 'B' - Grouting Repair* without exception or modification.

Replace item 1 in the list in the 1st paragraph of section 49-3.02A(4)(d)(ii) with:

01-20-12

1. Inspection pipes must be schedule 40 PVC pipe complying with ASTM D 1785 with a nominal pipe size of 2 inches. Watertight PVC couplers complying with ASTM D 2466 are allowed to facilitate pipe lengths in excess of those commercially available. Log the location of the inspection pipe couplers with respect to the plane of pile cutoff.

Add to section 49-3.02A(4)(d)(iv):

01-20-12

If the Engineer determines it is not feasible to use one of ADSC's standard mitigation plans to mitigate the pile, schedule a meeting and meet with the Engineer before submitting a nonstandard mitigation plan.

The meeting attendees must include your representatives and the Engineer's representatives involved in the pile mitigation. The purpose of the meeting is to discuss the type of pile mitigation acceptable to the Department.

Provide the meeting facility. The Engineer conducts the meeting.

Replace the 1st paragraph of section 49-3.02B(5) with:

01-20-12

Grout used to backfill casings must comply with section 50-1.02C, except:

1. Grout must consist of cementitious material and water, and may contain an admixture if authorized. Cementitious material must comply with section 90-1.02B, except SCMs are not required. The minimum cementitious material content of the grout must not be less than 845 lb/cu yd of grout.
2. Aggregate must be used to extend the grout as follows:

2.1. Aggregate must consist of at least 70 percent fine aggregate and approximately 30 percent pea gravel, by weight.
2.2. Fine aggregate must comply with section 90-1.02C(3).
2.3. Size of pea gravel must be such that 100 percent passes the 1/2-inch sieve, at least 90 percent passes the 3/8-inch sieve, and not more than 5 percent passes the no. 8 sieve.

3. California Test 541 is not required.
4. Grout is not required to pass through a sieve with a 0.07-inch maximum clear opening before being introduced into the grout pump.

Replace section 49-3.02B(8) with:

01-20-12

49-3.02B(8) Spacers

Spacers must comply with section 52-1.03D, except you may use plastic spacers.

Plastic spacers must:

1. Comply with sections 3.4 and 3.5 of the Concrete Reinforcing Steel Institute's *Manual of Standard Practice*
2. Have at least 25 percent of their gross plane area perforated to compensate for the difference in the coefficient of thermal expansion between the plastic and concrete
3. Be of commercial quality

Add to section 49-3.02C(4):

01-20-12

Unless otherwise shown, the bar reinforcing steel cage must have at least 3 inches of clear cover measured from the outside of the cage to the sides of the hole or casing.

Place spacers at least 5 inches clear from any inspection tubes.

Place plastic spacers around the circumference of the cage and at intervals along the length of the cage, as recommended by the manufacturer.

^^

50 PRESTRESSING CONCRETE

04-19-13

Replace "sets" at each occurrence in the 2nd and 3rd paragraphs of section 50-1.01C(3) with:

04-19-13

copies

Replace the 3rd paragraph of section 50-1.01D(2) with:

10-19-12

The Department may verify the prestressing force using the Department's load cells.

Replace the 6th paragraph of section 50-1.01D(3) with:

01-18-13

Jacking equipment must be calibrated as follows:

1. Each jack and its gage must be calibrated as a unit.

2. Each jack used to tension prestressing steel permanently anchored at 25 percent or more of its specified minimum ultimate tensile strength must be calibrated by METS within 1 year of use and after each repair. You must:
   2.1. Schedule the calibration of the jacking equipment with METS
   2.2. Verify that the jack and supporting systems are complete, with proper components, and are in good operating condition
   2.3. Mechanically calibrate the gages with a dead weight tester or other authorized means before calibration of the jacking equipment by METS
   2.4. Provide enough labor, equipment, and material to (1) install and support the jacking and calibration equipment and (2) remove the equipment after the calibration is complete
   2.5. Plot the calibration results
3. Each jack used to tension prestressing steel permanently anchored at less than 25 percent of its specified minimum ultimate tensile strength must be calibrated by an authorized laboratory within 6 months of use and after each repair.

Replace "diameter" in item 9 in the list in the 1st paragraph of section 50-1.02D with:

04-20-12

cross-sectional area

Add to section 50-1.02:

09-16-11

50-1.02G Sheathing

Sheathing for debonding prestressing strand must:

1. Be split or un-split flexible polymer plastic tubing
2. Have a minimum wall thickness of 0.025 inch
3. Have an inside diameter exceeding the maximum outside diameter of the strand by 0.025 to 0.14 inch

Split sheathing must overlap at least 3/8 inch.

Waterproofing tape used to seal the ends of the sheathing must be flexible adhesive tape.

The sheathing and waterproof tape must not react with the concrete, coating, or steel.

Add to section 50-1.03B(1):

01-20-12

After seating, the maximum tensile stress in the prestressing steel must not exceed 75 percent of the minimum ultimate tensile strength shown.

Add to section 50-1.03B(2):

09-16-11

50-1.03B(2)(e) Debonding Prestressing Strands

Where shown, debond prestressing strands by encasing the strands in plastic sheathing along the entire length shown and sealing the ends of the sheathing with waterproof tape.

Distribute the debonded strands symmetrically about the vertical centerline of the girder. The debonded lengths of pairs of strands must be equal.

Do not terminate debonding at any one cross section of the member for more than 40 percent of the debonded strands or 4 strands, whichever is greater.

Thoroughly seal the ends with waterproof tape to prevent the intrusion of water or cement paste before placing the concrete.

^^

51 CONCRETE STRUCTURES

04-19-13

Replace the paragraphs of section 51-1.01A with:

10-19-12

Section 51-1 includes general specifications for constructing concrete structures.

Earthwork for the following concrete structures must comply with section 19-3:

1. Sound wall footings
2. Sound wall pile caps
3. Culverts
4. Barrier slabs
5. Junction structures
6. Minor structures
7. Pipe culvert headwalls, endwalls, and wingwalls for a pipe with a diameter of 5 feet or greater

Falsework must comply with section 48-2.

Joints must comply with section 51-2.

Elastomeric bearing pads must comply with section 51-3.

Reinforcement for the following concrete structures must comply with section 52:

1. Sound wall footings
2. Sound wall pile caps
3. Barrier slabs
4. Junction structures
5. Minor structures
6. PC concrete members

You may use RSC for a concrete structure only where the specifications allow the use of RSC.

Replace the heading of section 51-1.01D(4) with:

04-19-13

Testing Concrete Surfaces

Add to section 51-1.01D(4)(a):

04-19-13

The Engineer tests POC deck surfaces for smoothness and crack intensity.

Add to the list in the 1st paragraph of section 51-1.01D(4)(b):

04-19-13

3. Completed deck surfaces, including ramps and landings of POCs

Replace the 4th paragraph in section 51-1.01D(4)(b) with:

04-19-13

Except for POCs, surface smoothness is tested using a bridge profilograph under California Test 547. Two profiles are obtained in each lane approximately 3 feet from the lane lines and 1 profile is obtained in

each shoulder approximately 3 feet from the curb or rail face. Profiles are taken parallel to the direction of traffic.

Add between the 5th and 6th paragraphs of section 51-1.01D(4)(b):

04-19-13

POC deck surfaces must comply with the following smoothness requirements:

1. Surfaces between grade changes must not vary more than 0.02 foot from the lower edge of a 12-foot-long straightedge placed parallel to the centerline of the POC
2. Surface must not vary more than 0.01 foot from the lower edge of a 6-foot-long straightedge placed perpendicular to the centerline of the POC

Add to section 51-1.01D(4)(d):

04-19-13

The Engineer measures crack intensity of POC deck surfaces after curing, before prestressing, and before falsework release. Clean the surface for the Engineer to measure surface crack intensity.

In any 100 sq ft portion of a new POC deck surface, if there are more than 10 feet of cracks having a width at any point of over 0.02 inch, treat the deck with methacrylate resin under section 15-5.05. Treat the entire deck width between the curbs to 5 feet beyond where the furthest continuous crack emanating from the 100 sq ft section is 0.02 inch wide. Treat the deck surface before grinding.

Add to section 51-1.03C(2)(c)(i):

04-20-12

Permanent steel deck forms are only allowed where shown or if specified as an option in the special provisions.

Replace the 3rd paragraph of section 51-1.03C(2)(c)(ii) with:

04-20-12

Compute the physical design properties under AISI's *North American Specification for the Design of Cold-Formed Steel Structural Members*.

Replace the 8th paragraph of section 51-1.03D(1) with:

10-19-12

Except for concrete placed as pipe culvert headwalls and endwalls, slope paving and aprons, and concrete placed under water, consolidate concrete using high-frequency internal vibrators within 15 minutes of placing concrete in the forms. Do not attach vibrators to or hold them against forms or reinforcing steel. Do not displace reinforcement, ducts, or prestressing steel during vibrating.

Add to section 51-1.03E(5):

08-05-11

Drill the holes without damaging the adjacent concrete. If reinforcement is encountered during drilling before the specified depth is attained, notify the Engineer. Unless coring through the reinforcement is authorized, drill a new hole adjacent to the rejected hole to the depth shown.

Add to section 51-1.03F(5)(a):

04-19-13

For approach slabs, sleeper slabs, and other roadway surfaces of concrete structures, texture the roadway surface as specified for bridge deck surfaces in section 51-1.03F(5)(b).

Replace "Reserved" in section 51-1.03F(5)(b) with:

04-20-12

51-1.03F(5)(b)(i) General

Except for bridge widenings, texture the bridge deck surfaces longitudinally by grinding and grooving or by longitudinal tining.

10-19-12

For bridge widenings, texture the deck surface longitudinally by longitudinal tining.

04-20-12

In freeze-thaw areas, do not texture PCC surfaces of bridge decks.

51-1.03F(5)(b)(ii) Grinding and Grooving

When texturing the deck surface by grinding and grooving, place a 1/4 inch of sacrificial concrete cover on the bridge deck above the finished grade shown. Place items to be embedded in the concrete based on the final profile grade elevations shown. Construct joint seals after completing the grinding and grooving.

Before grinding and grooving, deck surfaces must comply with the smoothness and deck crack treatment requirements.

Grind and groove the deck surface as follows:

1. Grind the surface to within 18 inches of the toe of the barrier under section 42-3. Grinding must not reduce the concrete cover on reinforcing steel to less than 1-3/4 inches.
2. Groove the ground surfaces longitudinally under section 42-2. The grooves must be parallel to the centerline.

51-1.03F(5)(b)(iii) Longitudinal Tining

When texturing the deck surface by longitudinal tining, perform initial texturing with a burlap drag or broom device that produces striations parallel to the centerline. Perform final texturing with spring steel tines that produce grooves parallel with the centerline.

The tines must:

1. Be rectangular in cross section
2. Be from 3/32 to 1/8 inch wide on 3/4-inch centers
3. Have enough length, thickness, and resilience to form grooves approximately 3/16 inch deep

Construct grooves to within 6 inches of the layout line of the concrete barrier toe. Grooves must be from 1/8 to 3/16 inch deep and 3/16 inch wide after concrete has hardened.

For irregular areas and areas inaccessible to the grooving machine, you may hand construct grooves. Hand-constructed grooves must comply with the specifications for machine-constructed grooves.

Tining must not cause tearing of the deck surface or visible separation of coarse aggregate at the surface.

Add to section 51-1.03F:

04-19-13

51-1.03F(6) Finishing Pedestrian Overcrossing Surfaces

Construct deck surfaces, including ramps and landings of POCs to the grade and cross section shown. Surfaces must comply with the specified smoothness, surface texture, and surface crack requirements.

The Engineer sets deck elevation control points for your use in establishing the grade and cross section of the deck surface. The grade established by the deck elevation control points includes all camber allowances. Except for landings, elevation control points include the beginning and end of the ramp and will not be closer together than approximately 8 feet longitudinally and 4 feet transversely to the POC centerline. Landing elevation control points are at the beginning and the end of the landing.

Broom finish the deck surfaces of POCs. Apply the broom finish perpendicular to the path of travel. You may apply water mist to the surface immediately before brooming.

Clean any discolored concrete by abrasive blast cleaning or other authorized methods.

Replace the paragraphs of section 51-1.04 with:

10-19-12

If concrete involved in bridge work is not designated by type and is not otherwise paid for under a separate bid item, the concrete is paid for as structural concrete, bridge.

The payment quantity for structural concrete includes the volume in the concrete occupied by bar reinforcing steel, structural steel, prestressing steel materials, and piling.

The payment quantity for seal course concrete is the actual volume of seal course concrete placed except the payment quantity must not exceed the volume of concrete contained between vertical planes 1 foot outside the neat lines of the seal course shown. The Department does not adjust the unit price for an increase or decrease in the seal course concrete quantity.

Structural concrete for pier columns is measured as follows:

1. Horizontal limits are vertical planes at the neat lines of the pier column shown.
2. Bottom limit is the bottom of the foundation excavation in the completed work.
3. Upper limit is the top of the pier column concrete shown.

The payment quantity for drill and bond dowel is determined from the number and depths of the holes shown.

Replace section 51-2.01B(2) with:

04-19-13

51-2.01B(2) Reserved

04-19-13

Delete the 4th paragraph of section 51-2.01C.

Replace "SSPC-QP 3" in the 1st paragraph of section 51-2.02A(2) with:

10-19-12

AISC-420-10/SSPC-QP 3

Replace the 2nd and 3rd paragraphs of section 51-2.02B(3)(b) with:

04-20-12

Concrete saws for cutting grooves in the concrete must have diamond blades with a minimum thickness of 3/16 inch. Cut both sides of the groove simultaneously for a minimum 1st pass depth of 2 inches. The completed groove must have:

1. Top width within 1/8 inch of the width shown or ordered
2. Bottom width not varying from the top width by more than 1/16 inch for each 2 inches of depth
3. Uniform width and depth

Cutting grooves in existing decks includes cutting any conflicting reinforcing steel.

Replace "sets" in the 1st and 2nd paragraphs of section 51-2.02D(1)(c)(ii) with:

04-19-13

copies

Replace "set" in the 7th paragraph of section 51-2.02D(1)(c)(ii) with:

04-19-13

copy

Add to the 1st paragraph of section 51-2.02D(3):

04-19-13

POC deck surfaces must comply with section 51-1.03F(6) before placing and anchoring joint seal assemblies.

Replace "sets" in the 2nd paragraph of section 51-2.02E(1)(c) with:

04-19-13

copies

Replace "set" in the 6th paragraph of section 51-2.02E(1)(c) with:

04-19-13

copy

Replace the 2nd paragraph of section 51-2.02E(1)(e) with:

08-05-11

Except for components in contact with the tires, the design loading must be the AASHTO LRFD Bridge Design Specifications Design Truck with 100 percent dynamic load allowance. Each component in contact with the tires must support a minimum of 80 percent of the AASHTO LRFD Bridge Design Specifications Design Truck with 100 percent dynamic load allowance. The tire contact area must be 10 inches measured normal to the longitudinal assembly axis by 20 inches wide. The assembly must provide a smooth-riding joint without slapping of components or tire rumble.

Replace "sets" in the 1st and 2nd paragraphs of section 51-2.02F(1)(c) with:

04-19-13

copies

Add between the 1st and 2nd paragraphs of section 51-4.01A:

10-19-12

Prestressing concrete members must comply with section 50.

04-20-12

Delete the 2nd paragraph of section 51-4.01A.

Replace the 3rd paragraph of section 51-4.01C(2) with:

04-20-12

For segmental or spliced-girder construction, shop drawings must include the following additional information:

1. Details showing construction joints or closure joints
2. Arrangement of bar reinforcing steel, prestressing tendons, and pressure-grouting pipe
3. Materials and methods for making closures
4. Construction joint keys and surface treatment
5. Other requested information

For segmental girder construction, shop drawings must include concrete form and casting details.

Replace "sets" in the 1st paragraph of section 51-4.01C(3) with:

04-19-13

copies

10-19-12

Delete the 1st and 2nd paragraphs of section 51-4.02A.

Replace the 3rd paragraph of section 51-4.02B(2) with:

04-20-12

For segmental or spliced-girder construction, materials for construction joints or closure joints at exterior girders must match the color and texture of the adjoining concrete.

Add to section 51-4.02B(2):

04-20-12

At spliced-girder closure joints:

1. If shear keys are not shown, the vertical surfaces of the girder segment ends must be given a coarse texture as specified for the top surface of PC members.
2. Post-tensioning ducts must extend out of the vertical surface of the girder segment closure end sufficiently to facilitate splicing of the duct.

For spliced girders, pretension strand extending from the closure end of the girder segment to be embedded in the closure joint must be free of mortar, oil, dirt, excessive mill scale and scabby rust, and other coatings that would destroy or reduce the bond.

Add to section 51-4.03B:

04-20-12

The specifications for prestressing force distribution and sequencing of stressing in the post-tensioning activity in 50-1.03B(2)(a) do not apply if post-tensioning of spliced girders before starting deck construction is described. The composite deck-girder structure must be post-tensioned in a subsequent stage.

Temporary spliced-girder supports must comply with the specifications for falsework in section 48-2.

Before post-tensioning of spliced girders, remove the forms at CIP concrete closures and intermediate diaphragms to allow inspection for concrete consolidation.

Add between the 1st and 2nd paragraphs of section 51-7.01A:

10-19-12

Minor structures include:

1. Pipe culvert headwalls and endwalls for a pipe with a diameter less than 5 feet
2. Drainage inlets
3. Other structures described as minor structures

10-19-12

Delete the 4th paragraph of section 51-7.01A.

Replace the 1st and 2nd paragraphs of section 51-7.01B with:

10-19-12

Concrete must comply with the specifications for minor concrete.

Add to section 51:

10-19-12

51-8–51-15 RESERVED

^^

52 REINFORCEMENT

01-18-13

Add to section 52-1.01A:

07-20-12

Splicing of bar reinforcement must comply with section 52-6.

Replace the 1st and 2nd paragraphs of section 52-1.02B with:

10-19-12

Reinforcing bars must be deformed bars complying with ASTM A 706/A 706M, Grade 60, except you may use:

1. Deformed bars complying with ASTM A 615/A 615M, Grade 60, in:
   1.1. Junction structures
   1.2. Sign and signal foundations
   1.3. Minor structures
   1.4. Concrete crib members
   1.5. Mechanically-stabilized-embankment concrete panels
   1.6. Masonry block sound walls
2. Deformed or plain bars complying with ASTM A 615/A 615M, Grade 40 or 60, in:
   2.1. Slope and channel paving
   2.2. Concrete barriers Type 50 and 60
3. Plain bars for spiral or hoop reinforcement in structures and concrete piles

Add to the list in the 3rd paragraph of section 52-1.02B:

04-20-12

9. Shear reinforcement stirrups in PC girders

Replace the 6th paragraph of section 52-6.01D(4)(a) with:

01-18-13

Before performing service splice or ultimate butt splice testing, perform total slip testing on the service splice or ultimate butt splice test samples under section 52-6.01D(4)(b).

Replace section 52-6.02D with:

10-21-11

52-6.02D Ultimate Butt Splice Requirements

When tested under California Test 670, ultimate butt splice test samples must demonstrate necking as either of the following:

1. For "Necking (Option I)," the test sample must rupture in the reinforcing bar outside of the affected zone and show visible necking.
2. For "Necking (Option II)," the largest measured strain must be at least:
   2.1. Six percent for no. 11 and larger bars
   2.2. Nine percent for no. 10 and smaller bars

Replace the 2nd and 3rd paragraphs of section 52-6.03B with:

01-18-13

Do not splice the following by lapping:

1. No. 14 bars
2. No. 18 bars
3. Hoops
4. Reinforcing bars where you cannot provide a minimum clear distance of 2 inches between the splice and the nearest adjacent bar

^^

54 WATERPROOFING

04-20-12

Add between "be" and "3/8 inch" in the 3rd paragraph of section 54-4.02C:

04-20-12

at least

^^

55 STEEL STRUCTURES

04-19-13

Replace "sets" at each occurrence in the 1st paragraph of section 55-1.01C(2) with:

04-19-13

copies

^^

56 SIGNS

04-19-13

07-20-12

Delete item 2 in the list in the 4th paragraph of section 56-3.01A.

Replace "sets" in the 1st paragraph of section 56-3.01C(2) with:

04-19-13

copies

07-20-12

Delete the 7th paragraph of section 56-3.02K(2).

07-20-12

Delete item 4 in the list in the 1st paragraph of section 56-3.02M(1).

Replace item 5 in the list in the 1st paragraph of section 56-3.02M(1) with:

04-19-13

Tubular

Add between the 1st and 2nd paragraphs of section 56-3.02M(1):

04-19-13

Clean and paint all ferrous metal parts of tubular sign structures after galvanizing, including the areas to be covered by sign panels. Do not paint sign structures other than tubular type unless specified in the special provisions.

Replace the headings and paragraphs in section 56-3.02M(3) with:

04-19-13

Where specified, clean and paint sign structures under section 59-5.

07-20-12

Delete "and box beam-closed truss" in the 2nd paragraph of section 56-3.02M(3)(a).

^^

57 WOOD AND PLASTIC LUMBER STRUCTURES

04-19-13

Replace "51-2.01C(3)" in the 1st paragraph of section 57-2.01C(3)(a) with:

10-19-12

57-2.01C(3)

Replace "sets" at each occurrence in the 1st paragraph of section 57-3.01C with:

04-19-13

copies

^^

58 SOUND WALLS

04-19-13

10-19-12

Delete the 3rd paragraph of section 58-1.01.

Replace the 1st paragraph of section 58-2.01D(5)(a) with:

08-05-11

You must employ a special inspector and an authorized laboratory to perform Level 1 inspections and structural tests of masonry to verify the masonry construction complies with section 1704, "Special Inspections," and section 2105, "Quality Assurance," of the 2007 CBC.

10-19-12

Delete the 1st paragraph of section 58-2.02F.

Replace "sets" at each occurrence in the 1st paragraph of section 58-4.01C with:

04-19-13

copies

^^

59 PAINTING

04-19-13

Replace "SSPC-SP 10" at each occurrence in section 59 with:

10-19-12

SSPC-SP 10/NACE no. 2

Replace "SSPC-SP 6" at each occurrence in section 59 with:

10-19-12

SSPC-SP 6/NACE no. 3

Replace "SSPC-CS 23.00" at each occurrence in section 59 with:

10-19-12

SSPC-CS 23.00/AWS C 2.23M/NACE no. 12

Replace "SSPC-QP 3 or AISC SPE, Certification P-1 Enclosed" in item 3 in the list in the 1st paragraph of section 59-2.01D(1) with:

10-19-12

AISC-420-10/SSPC-QP 3 (Enclosed Shop)

Replace the paragraphs in section 59-2.03A with:

10-19-12

Clean and paint all exposed structural steel and other metal surfaces.

You must provide enclosures for cleaning and painting structural steel. Cleaning and painting of new structural steel must be performed in an Enclosed Shop as defined in AISC-420-10/SSPC-QP 3. Maintain atmospheric conditions inside enclosures within specified limits.

Except for blast cleaning within closed buildings, perform blast cleaning and painting during daylight hours.

Replace item 1 in the list in the 2nd paragraph of section 59-2.03C(1) with:

10-19-12

1. Apply a stripe coat of undercoat paint on all edges, corners, seams, crevices, interior angles, junctions of joining members, weld lines, and similar surface irregularities. The stripe coat must completely hide the surface being covered. If spot blast cleaning portions of the bridge, apply the stripe coat of undercoat paint before each undercoat and follow with the undercoat as soon as practical. If removing all existing paint from the bridge, apply the undercoat first as soon as practical and follow with the stripe coat of undercoat paint for each undercoat.

Replace the heading of section 59-2.03C(2) with:

04-19-13

Zinc Coating System

Add to section 59-2.03C(2)(a):

04-19-13

Coatings for new structural steel and connections between new and existing structural steel must comply with the requirements shown in the following table:

Zinc Coating System

Description	Coating	Dry film thickness (mils)
All new surfaces:		
Undercoat	Inorganic zinc primer, AASHTO M 300 Type I or II	4–8
Finish coat[a]	Exterior grade latex[b], 2 coats	2 minimum each coat, 4–8 total
Total thickness, all coats		8–14
Connections to existing structural steel:[c]		
Undercoat	Inorganic zinc primer, AASHTO M 300 Type I or II	4–8
Finish coat[a]	Exterior grade latex[b], 2 coats	2 minimum each coat, 4–8 total
Total thickness, all coats		8–14

[a]If no finish coats are described, a final coat of inorganic zinc primer is required.
[b]Exterior grade latex must comply with section 91-2.02 unless otherwise specified.
[c]Includes the following locations:

1. New and existing contact surfaces
2. Existing member surfaces under new HS bolt heads, nuts, or washers
3. Bare surfaces of existing steel after trimming, cutting, drilling, or reaming
4. Areas within a 4-inch radius from the point of application of heat for welding or flame cutting

Add to section 59-2.03C:

04-19-13

59-2.03C(3) Moisture-Cured Polyurethane Coating System

Reserved

59-2.03C(4) State Specification Paint Waterborne Coating System

59-2.03C(4)(a) General

The State Specification PWB coating system for existing structural steel must comply with the requirements shown in the following table:

State Specification PWB Coating System

Surface	Description	State Specification PWB Coating	Dry film thickness (mils)
Surfaces cleaned to bare metal[a]:	1st undercoat	145	2–3
	2nd undercoat	146	2–3
	1st finish coat	171	1.5–3
	2nd finish coat	172	1.5–3
	Total thickness, all coats	--	7–12
Existing painted surfaces to be topcoated:	Undercoat	146	2–3
	1st finish coat	171	1.5–3
	2nd finish coat	172	1.5–3
	Total thickness, new coats	--	5–9

[a]Includes locations of spot blast cleaning

59-2.03C(4)(b) Finish Coats

Pressure rinse undercoated surfaces to receive finish coats. Perform pressure rinsing no sooner than 72 hours after the final application of undercoat.

The 1st finish coat must be applied within 48 hours of pressure rinsing.

Apply the 1st finish coat in 2 applications. The 1st application consists of a spray-applied mist application. Apply the 2nd application after the mist application has dried to a set-to-touch condition as determined using the procedure in section 7 of ASTM D 1640.

Apply the 2nd finish coat after the 1st finish coat has dried 12 hours unless authorized. You may apply the 2nd finish coat in a single application.

Add to section 59-5.01:

04-19-13

Where specified, prepare and paint sign structures under sections 59-2 and 59-3.

Instead of submitting proof of the certification complying with SSPC-QP 1, you may submit documentation with the painting quality work plan showing compliance with the requirements in section 3 of SSPC-QP 1.

Instead of submitting proof of the certification complying with SSPC-QP 2, you may submit documentation with the painting quality work plan showing compliance with the requirements in sections 4.2 through 4.4 of SSPC-QP 2, Category A.

Instead of submitting proof of the certification complying with AISC-420-10/SSPC-QP 3 (Enclosed Shop), you may submit documentation with the painting quality work plan showing compliance with the requirements in sections 5 through 18 of AISC-420-10/SSPC-QP3.

Replace the paragraphs of section 59-5.03 with:

04-19-13

59-5.03A General

You may prepare and paint sign structures before or after erection. After erection, repair damaged paint to the satisfaction of the Engineer.

The total dry film thickness of finish coats on contact surfaces of galvanized HS bolted connections (1) must be from 1 to 4 mils and (2) may be applied in 1 application.

59-5.03B Undercoating of Ungalvanized Surfaces

Blast-cleaned surfaces must receive a single undercoat consisting of an inorganic zinc coating as specified in AASHTO M 300, Type I or Type II, except:

1. The first 2 sentences of section 5.6 do not apply
2. Section 5.6.1 does not apply

If you propose to use a coating that is not on the Authorized Material List, submit the required documentation specified in section 5.6 of AASHTO M 300. Allow 30 days for the Engineer's review.

59-5.03C Testing of Inorganic Zinc Coating

Perform adhesion and hardness testing no sooner than 72 hours after application of the single undercoat of inorganic zinc coating.

59-5.03D Finish Coating

The exposed area of inorganic zinc coating must receive a minimum of 2 finish coats of exterior grade latex paint.

The 1st finish coat color must match no. 24558 of FED-STD-595. The 2nd finish coat color must match no. 24491 of FED-STD-595. The total dry film thickness of the applications of the 2nd finish coat must be not less than 2 mils.

Replace "solider" in the 5th paragraph of section 59-9.03 with:

04-19-13

soldier

^^

DIVISION VII DRAINAGE

62 ALTERNATIVE CULVERTS

10-19-12

Add to the end of section 62-1.01:

10-19-12

Alternative culverts include concrete collars and concrete tees and reinforcement for connecting new pipe to existing or new facilities. Concrete for the collars and tees must be minor concrete. Reinforcement for the concrete collars or tee connections must comply with section 52.

^^^

64 PLASTIC PIPE

10-19-12

Replace the 2nd paragraph of section 64-1.01A with:

10-19-12

Plastic pipe includes all necessary elbows, wyes, tees, other branches, fittings, coupling systems, concrete collars or tees, and reinforcement.

^^

65 CONCRETE PIPE

10-19-12

Replace the 2nd paragraph of section 65-1.01 with:

10-19-12

Concrete pipe includes all necessary elbows, wyes, tees, other branches, concrete collars or tees, and reinforcement.

^^

70 MISCELLANEOUS DRAINAGE FACILITIES

01-18-13

Replace section 70-5.02A(2) with:

01-20-12

70-5.02A(2) Plastic Flared End Sections

Plastic flared end sections must comply with ASTM D 3350.

Replace the 2nd, 3rd, and 4th paragraphs of section 70-7.02B with:

01-18-13

Before shipping, the exterior surfaces of the casing must be cleaned, primed, and coated to comply with ANSI/AWWA C213 or ANSI/AWWA C214.

Wrapping tape for repairing damaged coating and wrapping field joints and fittings must be a pressure-sensitive PVC or polyethylene tape with a minimum thickness of 50 mils, 2 inches wide.

Add to section 70-7.03:

01-18-13

Repair damaged coating on the casing and wrap field joints and fittings with wrapping tape as follows:

1. Before wrapping, thoroughly clean and prime the pipe casing, joints, and fittings under the tape manufacturer's instructions.
2. Wrap the tape tightly with 1/2 uniform lap, free from wrinkles and voids to provide not less than a 100-mil thickness.
3. Wrapping at joints must extend at least 6 inches over adjacent pipe casing coverings. Apply tension such that the tape will conform closely to contours of the joint.

^^

DIVISION VIII MISCELLANEOUS CONSTRUCTION

72 SLOPE PROTECTION

01-18-13

Replace the row under "Class" in the table in the 1st paragraph of section 72-3.02B with:

01-20-12

1/2 T	1/4 T	Light	Facing	Cobble

Replace the row under "Rock class" in the table in the 2nd paragraph of section 72-3.03E with:

01-20-12

1/2 T	1/4 T	Light	Facing	Cobble

Add to section 72-11.01B:

01-18-13

Expanded polystyrene and premolded expansion joint filler must comply with section 51-2.

Replace the 1st paragraph of section 72-11.01C(2) with:

01-18-13

Construct and finish minor concrete slope paving under section 51-1.

^^

74 PUMPING EQUIPMENT AND CONTROLS

04-19-13

Replace the 1st paragraph of section 74-1.01C(3) with:

04-19-13

Submit at least 5 copies of product data to OSD, Documents Unit. Each copy must be bound together and include an index stating equipment names, manufacturers, and model numbers. Two copies will be returned. Notify the Engineer of the submittal. Include in the notification the date and contents of the submittal.

Replace the 1st sentence of the 1st paragraph in section 74-2.01D(2) with:

01-20-12

Drainage pumps must be factory certified under ANSI/HI 14.6.

^^

75 MISCELLANEOUS METAL

04-19-13

Add between 2nd and 3rd paragraphs of section 75-1.03A:

04-19-13

Fabricate expansion joint armor from steel plates, angles, or other structural shapes. Shape the armor to the section of the concrete deck and match-mark it in the shop. Bevel the unbolted end of the checkered

plate at 45 degrees. Straighten warped sections of expansion joint armor before placing. Secure the expansion joint armor in the correct position during concrete placement.

Replace "SSPC-QP 3" in the 3rd paragraph of section 75-1.03E(4) with:

10-19-12

AISC-420-10/SSPC-QP3

^^

Replace section 78 with:

07-20-12

78 INCIDENTAL CONSTRUCTION

07-20-12

78-1 GENERAL

Section 78 includes specifications for incidental bid items that are not closely associated with other sections.

78-2–78-50 RESERVED

^^

80 FENCES

10-19-12

Add to section 80-2.02D:

10-19-12

Vertical stays must:

1. Comply with ASTM A641
2. Be 12-1/2 gage
3. Have a Class 3 zinc coating

Replace item 1 in the list in section 80-2.02E with:

10-19-12

Comply with ASTM A 116, Type Z, Grade 60, Class 1

Add after "galvanized wire" in the 1st paragraph of section 80-2.02F:

10-19-12

complying with ASTM A 641

Replace the 3rd and 4th paragraphs of section 80-2.02F with:

10-19-12

Each staple used to fasten barbed wire and wire mesh fabric to wood posts must:

1. Comply with ASTM F 1667
2. Be at least 1-3/4 inches long
3. Be manufactured from 9-gage galvanized wire

Wire ties used to fasten barbed wire and wire mesh to metal posts must be at least 11-gage galvanized wire complying with ASTM F 626. Clips and hog rings used for metal posts must be at least 9-gage galvanized wire complying with ASTM F 626.

Replace the 8th through 14th paragraphs of section 80-2.03 with:

10-19-12

Attach the wire mesh and barbed wire to each post.

Securely fasten tension wires to wood posts. Make a single or double loop around each post at each attachment point and staple the wire to the post. Use wire ties, hog rings, or wire clips to fasten the wires to the metal posts.

Connect each wood brace to its adjacent post with a 3/8 by 4-inch steel dowel. Twist the tension wires until the installation is rigid.

Stretch barbed wire and wire mesh fabric and fasten to each wood or steel end, corner, or gate post. Apply tension according to the manufacturer’s instructions using a mechanical stretcher or other device designed for such use. If no tension is specified by the manufacturer, use 250 pounds for the required tension. Evenly distribute the pull over the longitudinal wires in the wire mesh such that no more than 50 percent of the original depth of the tension curves is removed. Do not use a motorized vehicle, truck, or tractor to stretch the wire.

Attach barbed wire and wire mesh fabric to the private-property side of posts. On curved alignments, place the wire mesh and barbed wire on the face of the post against which the normal pull of the wire mesh and wire will be exerted. Terminate the wire mesh and barbed wire at each end, corner, pull, and gate post in the new fence line. Attach wire mesh and barbed wire to each wood or steel end, corner, pull, or gate post by wrapping each horizontal strand around the post and tying it back on itself with at least 4 tightly-wound wraps.

At line posts, fasten the wire mesh to the post at the top and bottom and at intermediate points not exceeding 10 inches apart. Fasten each line of barbed wire to each line post. Use wire ties or clips to fasten the wires to metal posts under the post manufacturer’s instructions. Drive staples crosswise with the grain of the wood and pointed slightly downward. Drive staples just short of actual contact with the wires to allow free longitudinal movement of those wires and to prevent damage to the wire’s protective coating. Secure all wires to posts to maintain horizontal alignment.

Splices in barbed wire and wire mesh are allowed provided there are no more than 2 splices per 50 feet of fence. Use commercially-available galvanized mechanical wire splices or a wire splice created by tying off wire. Install mechanical wire splices with a tool designed for that purpose under the manufacturer's instructions. Tie off the wire as follows:

1. Carry the ends of each wire 3 inches past the tied-off knot location and wrap around the wire for at least 6 turns in opposite directions.
2. Remove the splice tool and close the space by pulling the end of the wires together.
3. Cut the unused ends of the wire close and neat.

Add to "≤ 6" in the table in the 4th paragraph of section 80-3.02B:

10-19-12

feet

^^

DIVISION IX TRAFFIC CONTROL FACILITIES

83 RAILINGS AND BARRIERS

10-19-12

Replace "80-2.02" in the 2nd paragraph of section 83-1.02E with:

10-19-12

80-3.02B

Add to section 83-2.02D(1):

10-21-11

For a concrete barrier transition:

1. Remove portions of the existing concrete barrier where shown under section 15-3
2. Roughen the contact surface of the existing concrete barrier
3. Drill and bond dowels into the existing concrete barrier under section 51-1

Add to section 83-2.02:

10-19-12

83-2.02H–83-2.02M Reserved

^^

84 TRAFFIC STRIPES AND PAVEMENT MARKINGS

01-20-12

Replace the 1st paragraph in section 84-2.04 with:

01-20-12

A double extruded thermoplastic traffic stripe consisting of two 4-inch wide yellow stripes is measured as 2 traffic stripes.

A double sprayable thermoplastic traffic stripe consisting of two 4-inch wide yellow stripes is measured as 1 traffic stripe.

Add to section 84:

01-20-12

84-6 THERMOPLASTIC TRAFFIC STRIPES AND PAVEMENT MARKINGS WITH ENHANCED WET NIGHT VISIBILITY

Reserved

84-7–84-10 RESERVED

^^

86 ELECTRICAL SYSTEMS

10-19-12

Replace section 86-2.06 with:

01-20-12

86-2.06 PULL BOXES

86-2.06A General

86-2.06A(1) Cover Marking

Marking must be clearly defined, uniform in depth, and parallel to either the long or short sides of the cover.

Marking letters must be 1 to 3 inches high.

Before galvanizing steel or cast iron cover, apply marking by one of the following methods:

1. Use cast iron strip at least 1/4 inch thick with letters raised a minimum of 1/16 inch. Fasten strip to cover with 1/4-inch flathead stainless steel machine bolts and nuts. Peen bolts after tightening.
2. Use sheet steel strip at least 0.027 inch thick with letters raised a minimum of 1/16 inch. Fasten strip to cover by spot welding, tack welding, or brazing, with 1/4-inch stainless steel rivets or 1/4-inch roundhead stainless steel machine bolts and nuts. Peen bolts after tightening.
3. Bead weld the letters on cover such that the letters are raised a minimum of 3/32 inch.

86-2.06A(2) Installation and Use

Space pull boxes no more than 200 feet apart. You may install additional pull boxes to facilitate the work.

You may use a larger standard size pull box than that shown on the plans or specified.

A pull box in ground or sidewalk area must be installed as follows:

1. Embed bottom of the pull box in crushed rock.
2. Place a layer of roofing paper on the crushed rock.
3. Place grout over the layer of roofing paper. Grout must be 0.50 to 1 inch thick and sloped toward the drain hole.
4. Make a 1-inch drain hole in the center of the pull box through the grout and roofing paper.
5. Place grout between the pull box and the pull box extension, and around conduits.

The top of the pull box must be flush with the surrounding grade or the top of an adjacent curb, except in unpaved areas where the pull box is not immediately adjacent to and protected by a concrete foundation, pole, or other protective construction. Place the pull box 1-1/4 inches above the surrounding grade. Where practical, place a pull box shown in the vicinity of curbs or adjacent to a standard on the side of the foundation facing away from traffic. If a pull box is installed in a sidewalk area, adjust the depth of the pull box so that the top of the pull box is flush with the sidewalk.

Reconstruct the sump of an existing pull box if disturbed by your activities. Remove old grout and replace with new if the sump was grouted.

86-2.06B Non-Traffic-Rated Pull Boxes

Reserved

86-2.06C Traffic Pull Boxes

Traffic pull box and cover must comply with ASTM C857, "Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures," for HS20-44 loading. You must be able to place the load anywhere on the box and cover for 1 minute without causing cracks or permanent deformations.

Frame must be anchored to the box with 1/4 by 2-1/4 inch concrete anchors. Four concrete anchors must be included for No. 3-1/2(T) pull box; one placed in each corner. Six concrete anchors must be included for No. 5(T) and No. 6(T) pull boxes; one placed in each corner and one near the middle of each of the longer sides.

Nuts must be zinc-plated carbon steel, vibration resistant, and have a wedge ramp at the root of the thread.

After installation of traffic pull box, install the steel cover and keep it bolted down when your activities are not in progress at the pull box. When the steel cover is placed for the final time, the cover and Z bar frame must be cleaned of debris and tightened securely.

Steel cover must be countersunk approximately 1/4 inch to accommodate the bolt head. When tightened, the bolt head must not exceed more than 1/8 inch above the top of the cover.

Concrete placed around and under traffic pull boxes must be minor concrete.

Replace "project" in the 3rd paragraph of section 86-2.11A with:

10-19-12

work

Replace "Contract" in item 2 in the list in the 11th paragraph of section 86-2.11A with:

10-19-12

work

^^

88 GEOSYNTHETICS

01-18-13

Replace the row for hydraulic bursting strength in the table in the 2nd paragraph of section 88-1.02B with:

10-19-12

Puncture strength, lb min	ASTM D 6241	310
Trapezoid tearing strength, lb min	ASTM D 4533	56

Replace the 3rd paragraph in section 88-1.02C with:

10-19-12

Geocomposite wall drain must be from 0.25 to 2 inches thick.

Replace the value for permittivity of woven fabric in the table in the 1st paragraph of section 88-1.02E with:

01-20-12

0.05

Replace the value for apparent size opening of nonwoven fabric in the table in the 1st paragraph of section 88-1.02E with:

01-20-12

0.012

Replace the table in the 1st paragraph of section 88-1.02G with:

01-20-12

Sediment Filter Bag

Property	Test	Values	
		Woven	Nonwoven
Grab breaking load, lb, 1-inch grip min, in each direction	ASTM D 4632	200	250
Apparent elongation, percent min, in each direction	ASTM D 4632	10	50
Water flow rate, gal per minute/sq ft min and max average roll value	ASTM D 4491	100-200	75-200
Permittivity, sec^{-1} min	ASTM D 4491	1.0	1.0
Apparent opening size, inches max average roll value	ASTM D 4751	0.023	0.012
Ultraviolet resistance, % min retained grab breaking load, 500 hr.	ASTM D 4355	70	70

Replace the table in the 1st paragraph of section 88-1.02H with:

01-20-12

Temporary Cover

Property	Test	Values	
		Woven	Nonwoven
Grab breaking load, lb, 1-inch grip min, in each direction	ASTM D 4632	200	200
Apparent elongation, percent min, in each direction	ASTM D 4632	15	50
Water flow rate, gal per minute/sq ft min and max average roll value	ASTM D 4491	4-10	80-120
Permittivity, sec^{-1} min	ASTM D 4491	0.05	1.0
Apparent opening size, inches max average roll value	ASTM D 4751	0.023	0.012
Ultraviolet resistance, % min retained grab breaking load, 500 hr.	ASTM D 4355	70	70

Replace section 88-1.02P with:

01-18-13

88-1.02P Biaxial Geogrid

Geosynthetics used for biaxial geogrid must be a punched and drawn polypropylene material formed into an integrally formed biaxial grid. When tested under the referenced test methods, properties of biaxial geogrid must have the values shown in the following table:

Biaxial Geogrid

Property	Test	Value
Aperture size, inch[a] min and max	Calipered	0.8-1.3 x 1.0-1.6
Rib thickness, inch min	Calipered	0.04
Junction thickness, inch min	Calipered	0.150
Tensile strength, 2% strain, lb/ft[a] min	ASTM D 6637	410 x 620
Tensile strength at ultimate, lb/ft[a] min	ASTM D 6637	1,310 x 1,970
Ultraviolet resistance, percent min retained tensile strength, 500 hours	ASTM D 4355	100
Junction strength, lb/ft[a] min	ASTM D 7737	1,220 x 1,830
Overall flexural rigidity, mg-cm min	ASTM D 7748	750,000
Torsional rigidity at 20 cm-kg, mm-kg/deg[b] min	GRI:GG9	0.65

[a]Machine direction x cross direction
[b]Geosynthetic Research Institute, Test Method GG9, *Torsional Behavior of Bidirectional Geogrids When Subjected to In-Plane Rotation*

^^

DIVISION X MATERIALS

90 CONCRETE

08-05-11

Replace the 3rd paragraph of section 90-1.01C(7) with:

08-05-11

Submit weighmaster certificates in printed form or, if authorized, in electronic media. Present electronic media in a tab-delimited format on a CD or DVD. Captured data for the ingredients represented by each batch must be line feed carriage return and one line separate record with sufficient fields for the specified data.

Replace the 3rd paragraph of section 90-3.01C(5) with:

08-05-11

Production data must be input by hand into a pre-printed form or captured and printed by the proportioning device. Present electronic media containing recorded production data in a tab-delimited format on a CD or DVD. Each capture of production data must be followed by a line feed carriage return with sufficient fields for the specified data.

^^

91 PAINT

10-19-12

Add to section 91-2:

10-19-12

91-2.03 MOISTURE-CURED POLYURETHANE COATING

Reserved

Replace "saint" in the 1st paragraph of section 91-4.05 with:

10-19-12

paint

^^

92 ASPHALTS

01-20-12

Replace the row for dynamic shear for original binder in the table in the 1st paragraph of section 92-1.02B with:

01-20-12

Dynamic shear, Test temperature at 10 rad/s, ℃ min G*/sin(delta), kPa max G*/sin(delta), kPa	T 315	58 1.00 2.00	64 1.00 2.00	64 1.00 2.00	64 1.00 2.00	70 1.00 2.00